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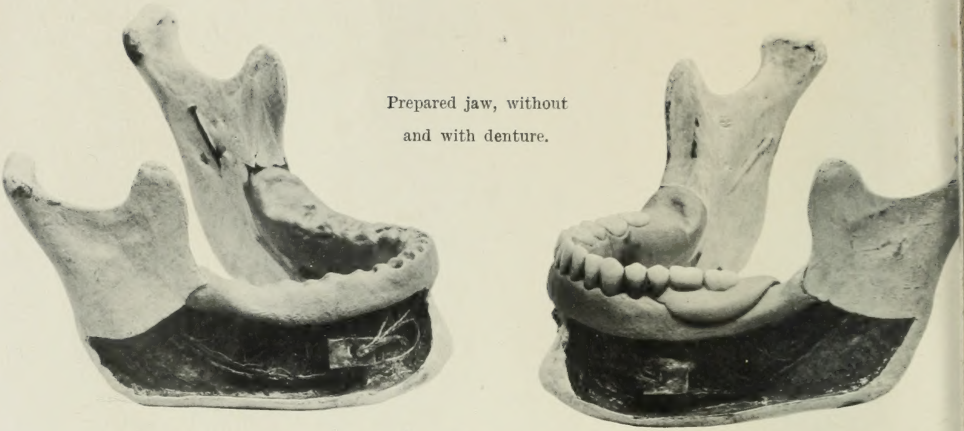
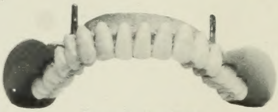
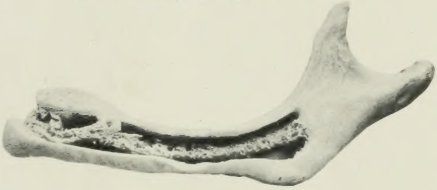


Prepared jaw, without and with denture.

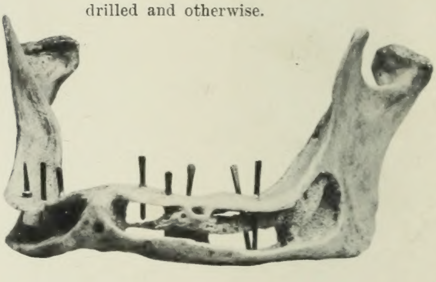


Lower denture.

Section of edentulous jaw, shewing inferior dental canal running through it.



Edentulous jaw, with pins shewing where bone may be safely drilled and otherwise.



Impression taken 6th Dec., 1890, of a denture which has been worn with great comfort since July, 1888, when two holes were drilled in upper jaw.

Impression of lower jaw where incisor teeth were extracted, Feb., 1889, and denture inserted, with pins entering the sockets of two of them.

Impression shewing hole drilled in left side to prevent denture from veering round on account of protuberance on one side only. Denture worn since Aug., 1888, with great satisfaction.

THE

DENTAL RECORD:

A

MONTHLY JOURNAL

OF

DENTAL SCIENCE, ART, AND LITERATURE,

DEVOTED TO THE INTERESTS OF THE PROFESSION.

VOL. XI.

LONDON:

PUBLISHED BY

THE DENTAL MANUFACTURING COMPANY, LIMITED,

6 TO 10, LEXINGTON STREET, GOLDEN SQUARE,

LONDON, W.; AND

71A, GROSVENOR STREET, MANCHESTER.

LONDON:
PRINTED BY ADAMS BROS.,
MOOR LANE, E.C.

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THE DENTAL RECORD.

VOL. XI. JANUARY 1st, 1891. No. 1.

Original Communications.

A METHOD OF PREVENTING UPPER AND LOWER DENTURES FROM SLIPPING FORWARD.*

By William Dall, L.D.S., Glasgow.

Mr. President and Gentlemen—It is with some diffidence that I bring before you this method of keeping upper and lower dentures from slipping forward, and indeed rendering them absolutely immovable. I can assure you I have undertaken the task only after mature consideration, as it is a subject that may cause no small amount of discussion, especially as many of you, my *confrères*, are more versed in bacteriology, and osteology than myself. I may say that in one way my method might involve serious consequences, were it practised by careless or indifferent operators, but with ordinary care it may help you, as it has helped me, to overcome a difficulty against which most of us have had to contend. As I have not seen anything relating to this method, it occurred to me I could not do better than bring it before you, not only for your consideration but also for my instruction, as I trust it may prove a stepping-stone to something more perfect. It is not my intention to trouble you with a very long paper, as two of my patients have been good enough to accompany me, that you may see and judge of the results for yourselves; so I shall give you a general outline only of the method. My method is simply this : to fasten two gold pins to the denture; these enter holes either made by drilling the jaw-bone, or caused by the reparative processes occurring in that bone around the two pins that have been made to enter the sockets from which two teeth have been extracted. You will now see, in the patients before you, this method carried out. In these patients only the lower jaw has been dealt with. I have been unable to bring anyone with an upper denture fastened according to my method.

---

* A Paper read before the Odonto-Chirurgical Society of Scotland.

The lower jaw of this gentlemen (patient shown), was drilled three months ago, and a denture inserted about a week after the operation.

In the case of this lady (patient shown), the teeth were extracted about nine months ago, and a denture inserted on the third day.

In the upper jaw, it is even simpler and just as satisfactory where the bone has been drilled. After my experience, however, it is generally otherwise in the case where the pins enter the sockets of extracted teeth, as in this case, absorption seems to take place more in the upper jaw on the labial and buccal surfaces, than on the palatal, so that ultimately the pins become exposed and the desired end is frustrated, whereas in the lower jaw absorption takes place more equally, and so the hole or holes for the pins are left in the centre of the jaw. In some cases, however, I have been successful, and to such a degree as to supply two patients with upper dentures without palate plates, and these have been worn with perfect comfort for about two years, but as a rule, I now prefer to drill the upper jaw-bone.

The mode of procedure where the teeth have to be extracted is this : Extract the teeth, and the following day take the impression, modelling your case in wax, and seeing that all is right after the bite has been properly adjusted ; then add the two gold pins to your case—one on each side where most suitable, that they may enter the centre of the sockets of two of the extracted teeth. These we will suppose to be the first bicuspids or canines, which are the most suitable. The pins should be as long as possible, indeed they must not be too short, or they are apt to set up irritation, and hence absorption. It is to this error I traced one or two of my early failures. Having fixed the pins to the model, again try it in the mouth to make sure that the pins are perfectly straight, as that is a most important point ; then cut a slit in the model wide enough not to disturb them, fasten them to it with plaster, and proceed to vulcanise in the ordinary way.

When the holes are to be drilled, the method is very different.

For the lower jaw fasten a drill a little larger than the intended pin size in the right-angle hand-piece. Paint the part and around it with a 50 per cent. solution of cocaine, and the drill being saturated with Koch's solution, drill to the required depth. Of course great discretion must be exercised in choosing the part to be drilled.

I would say any place between the mental foramen and the symphysis. Other places may be drilled with safety, but that altogether depends upon the formation of the patient's jaw, as you will see from the preparations of jaws which I place on the table.* The upper may be drilled in any part, but care must be taken not to pierce the floor of the antrum. Having drilled the holes, the patient is then warned to beware of cold, supplied with a mouthwash, composed of Koch's solution, &c., and asked to return next day. On the following day the holes are syringed out with Koch's solution, and the patient supplied with a different mouth-wash, for healing purposes. If not hurried for time, the impression is taken on the third day with the pins placed in the jaw, as in the case of pivots, or they may be inserted into the wax case before finishing, as in the former method. With patients from the country, I have inserted dentures on the third day, and as yet have had no bad results; indeed my first case, three years ago in January, was a patient from the country, whom I did not see for six months after the operation, when all was very satisfactory, and to this day she does not suspect that the drilling of the jaw-bone was any unusual thing. My experience in drilling this bone has been that the right side of the upper is always harder than the left and generally a little more painful, whereas in the lower it is quite the reverse, the left being harder than the right. No doubt some of you will ask, what takes place in the jaws, where I have drilled? I have not the least doubt but that the walls of these circular holes become sclerosed, and if this be the case, I think you will say with me that there is very little danger. As to necrosis, I do not think there is any fear in regard to that after healing has set in, and especially in sclerosed walls.

Certainly I would not recommend the operation to be done with a careless and especially a strumous patient. To give me sufficient confidence to lay this matter before you, I took a patient and consulted one of our most eminent surgeons, and he was also of opinion that the walls become sclerosed.

Very little need be said of the method of inserting dentures with pins into the sockets of extracted teeth, as that may be done without any hesitation. Indeed, I might venture to say that if this method were thoroughly successful, which time alone will show, and were it put into general practice by all dentists, in the lower jaw at least, our difficult cases would ultimately disappear. If the drilling of the upper were carried out, we would be able in some cases to supply dentures without palates.

---

* See Illustrations.

This prepared lower jaw, which I will now show you, and from which we will suppose the teeth to have been extracted, and a denture made for it the following day, will perhaps give you a practical idea of the method.

This other edentulous jaw with the inserted pins will shew where the bone may be safely drilled and otherwise.

I have cut up another edentulous jaw into sections, to shew its structure with the inferior dental canal running through it.

Here are also a few models with descriptions attached, which were taken last week, and the dentures of which have been worn with every satisfaction. These preparations are shown in the illustrations.

Since commencing this method about three years ago, I have drilled ten cases in all, seven in the upper, and three in the lower, and in one only, an upper, did inflammation and suppuration set in, through the patient catching cold, but which was quickly overcome by syringing with diluted carbolic acid and glycerine.

In fifteen cases I have inserted dentures, principally lower, with pins entering the sockets of extracted teeth.

I will now shew you the contrivance which Mr. Lennox, of Cambridge, has devised and used with success. It is also worthy of our consideration, for by its means where one cannot drill the bone, owing perhaps to the age of the patient or other causes, his method may be adopted successfully in our practices, and certainly without pain. I will read the letter that I received from him, and I am sure the society will always feel indebted to him for his courtesy in letting us have a sight of his contrivance.

CAPPING OSTEO FILLINGS.*

By E. Gardner.

Mr. President and Gentlemen,

I have the privilege this evening of reading a paper on a method which, I believe, will considerably prolong the life of an ordinary osteo filling, It has no doubt come under the observation of every operator, that if osteo be put into a crown cavity of a tooth, in a short time it will be found, in many cases, to have worn away to a concave shape ; because that portion which is in contact with the edges is the least exposed to attrition, owing to the protection afforded by the edges. In an interstitial cavity the crown is exposed to similar conditions. But at the cervical edge, especially if it extend to the gum, the osteo quickly perishes, and is washed away, mainly owing to the contact with it of decomposing particles of food, and of abnormal secretions. If the osteo be covered by a thin cap of metal the attrition as well as the contact of food with it, is entirely prevented ; and the access of secretions is, to a great extent, obviated.

---

* A Paper read before the Students' Society, London Dental Hospital.

To treat a cavity for a cap, it should be prepared in the same manner as if it were intended to insert an ordinary osteo filling. It should then be filled with gutta-percha or wax, which, in the case of an interstitial cavity, should be trimmed off in a plane, slightly below the edges of the cavity, to avoid making an undercut with the approximate tooth. But at the cervical edge the gutta-percha should be left in the same plane. In a cavity not in an interstitial position, the material should be trimmed off in a plane slightly below all the edges, in order that, when an impression is taken, the extent of the cavity may be seen on the model.

To obtain an impression of the cervical edge of an interstitial cavity, and more particularly in such cavities where the cervical edge extends below the gum, a piece of No. 3, soft platinum, or other soft metal of the same thickness, should be cut into the shape of a matrix, and passed down until it slightly overlaps the edge of the cavity. Then, while with any convenient instrument it is held against the cavity, the portion overlapping should be burnished with a small flat spatula to fit the cervical margin of the cavity, and the free ends of the matrix should be left to project beyond the lingual and labial edges. While in this position, a piece of wood or gutta-percha should be slightly wedged between the matrix and the approximate tooth, to hold it in position while taking an impression of the teeth ; or, if there are two approximate interstitial cavities, a long strip of metal should be taken and bent into the form of a Herbst matrix, and fitted to the cervical margins of the cavities ; and the wedge, if necessary, placed between them.

For taking the impression in all cases where the cervical edge is near or below the gum, or when a matrix is employed, plaster of

Paris should be used, both for accuracy and in order that the matrix may, if possible, be withdrawn in the impression. A small amount of potash alum should be made use of, to accelerate the setting of the plaster, which should be used just at the moment it is beginning to set, so that a slight pressure is required to place it in position. A double advantage is thus obtained : first, by ensuring a much sharper impression ; and secondly, by being able to withdraw it from the mouth in a much shorter time than would be the case if the plaster were used in a sloppy condition. If the matrix should not be successfully withdrawn in the impression, it should be taken from the mouth, and sealed with a little wax into its position in the impression. In all other small or easily accessible cavities, any of the modelling compositions may be utilized for taking the impression. But whatever substance is selected, a small amount should only be used, and this should be manipulated in a small side tray in order that a minimum amount of discomfort may be given to the patient ; since it is desirable to obtain an impression of one tooth only on either side of that to be filled. If any opposing teeth be antagonistic to the portion of the tooth to be filled, a small impression should be taken of them. The bite will usually shew itself when the teeth on the models are placed together ; or, if any doubt exists, a guide may be taken and the models placed in an articulator.

A model of the teeth being obtained by the foregoing method, a thin dividing saw, in interstitial cases, should be passed down close to, but on the opposite side of the matrix to the cavity, and the model should be sawn half-way through. Then the remainder should be broken in order that the two halves may be placed in position again. When a double matrix is used the saw should be passed between. It should be noted that a plaster impression, before being cast, should be painted with a thin solution of soap. The matrix can now be removed, and a correct impression of the cervical margin will be seen. Any little defects may now be trimmed away and the cervical margin fully exposed. In other cases, the whole of the margins of the cavity will be seen on the model, except perhaps in cavities where the cervical edge has been overlapped by the gum, and, therefore, for various reasons, unable to be fully exposed by packing it out. In these cases, especially if a plaster impression has been taken, sufficient will be seen of the cervical edge on the model for a guide to trim a cervical margin. It is also better in these cases to freely trim the model, because the pressure of adjusting the cap will bend the edge of it out, whereas it would be troublesome to turn the edge in.

The cavity of the tooth on the model should now be filled up and contoured as required with wax; and, if it be in an interstitial position, the two halves of the model should be placed together to as certain the relation of the contour to the approximate tooth; or, in the case of two approximate cavities, with each other. Where the crown of a tooth is involved, the wax should be articulated to the opposing teeth, and cleared away to allow them perfect freedom to move in every direction without touching it; since any neglect of this will often lead to the breaking down of the filling in the mouth soon after the operation. It is also important, when waxing up the cavity on the model, to allow for thickness of metal which is to be struck over the wax; or its omission will tend to raise the bite and make the contour too large. The wax should now be polished with French chalk, and the cap outlined to overlap slightly all the edges of the cavity, and extended over any carious fissures that may have been excavated. A pattern of the extent of the cap should be cut in lead foil to ascertain the amount of metal required, as this will facilitate the striking.

The most convenient thicknesses of plate for constructing the caps are Nos. 3 and 4, the difference in thickness mainly depending on the size of the cap, and on the strength required. Not less than 22-carat gold should be used in order that it may retain its colour in the mouth, and be sufficiently soft for its edges to be burnished. If the colour of gold be objectionable, soft platinum may be utilized, and this will be found to manipulate almost equally as well as fine gold, and retain a white and clean appearance in the mouth.

Dies for striking the caps are quickly made by means of the "Clay Modelling Apparatus," which can be obtained at some of the Depôts, and is best used for this purpose in the following way. The special tray should be filled with the clay, and, after dusting the model with French chalk from a fine linen bag, an impression should be taken of that portion of the tooth over which the cap is to be struck. The rubber ring, which just fits the outside of the tray, should be placed over it, and the composition metal, made by mixing equal parts of bismuth, lead, and tin, which fuses at a low temperature, should be poured in. Immediately it is set, the clay impression should be removed undamaged, and the die cooled by placing it upon a cold surface. Two successive dies are necessary to fit a cap successfully; and the second if poured into the same impression, after it has been corrected by pressing the tooth into it again, will be more perfect, since the clay is drier after the first die has been cast. To obtain a counter-die, the die when quite cold should be placed at the bottom of the rubber ring, and thickly dusted with French chalk. The ring should then be filled up by pouring into it some metal of the same composition. When set, the rubber ring may be removed and the whole cooled in water.

To facilitate the striking of a contour cap, the metal, after being annealed, should be placed over a small depression in a hard piece of wood, and with a round or oval shaped punch, it should be knocked up roughly into a concave form, of such a shape as the surface on which it is to be struck may require. After this, the cap may more readily be made to fit the die by knocking it into its position with a rivetting hammer, whose edges are rounded; and then the cap on the die should be placed in the counter-die and struck between them. The cap should now be placed on the model, and any excess filed off. Any corners or edges that may tend to curl from the tooth should be bent down with pliers and the cap again struck. The edges should now be filed as thin as possible, by bevelling them from the outside, before giving the cap a few slight blows between the second couple of dies, to make it fit the model. If, however, the cap should now fail to fit, the edges may be burnished to the model. In cases where a natural space has existed between two teeth, favouring the retention of food, and would be reproduced unless the masticating surface be curtailed, or the filling contoured to an unnatural size, it may now be filled by soldering to the side of the cap, below the masticating surface, one or more thicknesses of plate, which should be filed into the shape of a small contour, and will thus put but little strain upon the cap.

The cap is now ready for the tag, which has a threefold use—(1) to hold the cap into the osteo; (2) to give the whole of it rigidity; (3) to grip every corner and edge, to prevent them springing from the osteo during the process of burnishing the edges of the cap to the tooth.

The tag should consist of a certain number of spokes, as required, of dental alloy or platinum wire of the same thickness as that used for making springs. It may conveniently be made by soldering one or more pieces of the wire near to each other, and crossing a centre piece at right angles. The spokes thus obtained should be adjusted to form loops, and the ends of these should be soldered near to the edges of the cap, at the points most evidently requiring support. Gold or silver solder, in very small pieces, should be used for this purpose, to prevent it running about and spoiling the edges of the cap.

I should here mention that the proper adjustment of the tag is the only real difficulty in the successful construction of the caps, and, on this account, it should be fixed by the operator, who is best acquainted with the extent of the cavity. Care should be taken that the ends of the loops are fixed at sufficient distances from the edges of the cap, to avoid coming in contact with the edges of the cavity, and that the loops themselves are sufficiently shallow to prevent them touching any part of it. In doubtful cases, or with shallow cavities, the exact limits to which the tag may extend can be ascertained by warming the cap and filling it with bees' wax. Afterwards, it should be pressed into position in the mouth, which will cause the wax to mould itself to the cavity, and thus show its extent. After the tag has been fixed, the cap should be cleaned in acid, and smoothed, if much roughened in working, with No. 1 sandpaper. A surface can be obtained by stoning it with "Water of Ayr" stone, and the cap polished by brushing it on the lathe with pumice, and finally, when a high polish is desired, with a paste of rouge and spirits of wine.

The cap is now ready to adjust in the mouth, but before being finally fixed, it should be tried on the tooth and the edges burnished to fit the margins of the cavity. This should now be thoroughly dried with amadou, and, if the caps are to be fixed in the lower jaw, the assistance of a saliva ejector may be required.

The most convenient osteos for manipulating with the caps, are the slow setting ones, and those of a fine consistency; but more especially those which, when mixed fairly thick, become in a few moments very plastic before finally setting. One portion of the osteo should be worked into the cap, which must be perfectly dry, and the other into the cavity of the tooth, care being taken that an excess, rather than otherwise, is present. The cap should then be immediately conveyed to the tooth and pressed with a convenient burnisher into position, taking pains to get an adjustment at the cervical edge first. The excess should be quickly cleared away and the cap held bodily in position while the edges are burnished to fit the tooth, before the osteo has completely set. If after the completion of the operation the bite should be inadvertently raised a little, it will be quite legitimate to grind a corresponding portion off the antagonizing cusp.

From the detailed description I have given of this method ot filling, it might appear to be a longer operation than it really is.

The greater part of the work is done in the work-room, and the whole time consumed at the operating chair is not greater than in an ordinary average filling.

The value of this method is best seen in a typical case. Take, for example, a delicate nervous girl, with soft blue translucent teeth, shewing four large cavities in the upper bicuspids. What can be the treatment here? Neither the patient's health nor possibly her means may permit of a large contour gold filling; nor, perhaps, may the teeth be worth the labour and cost. In such a case, amalgam is not permissible from an artistic point of view, and osteo, unprotected, would quickly fail. It is, therefore, obvious that the method I have described is in a case of this kind exceedingly valuable. Another class of cavities, frequently met with, is where the walls are too weak to support a metal filling, and sufficient retaining points cannot be obtained without a painful encroachment on the pulp or without its extirpation. Again, this method is most useful in those cavities where the tissues are both hard and extremely sensitive, and of such a form that a metal filling cannot be retained without much painful cutting of the tissues; and in all other cases, where osteo must be used, owing to extreme sensitiveness, it is also valuable.

Although I have chiefly referred to the use of the caps for molars and bicuspids, a further experience may shew them to be useful for many interstitial cavities in the front teeth, especially where the cavity extends somewhat to the lingual surface.

Before forming your opinion as to the durability of the filling I have endeavoured to describe, I would ask permission to remind you of the advantages of a perfect contour, which may, by this method, almost always be obtained by perfectly restoring a tooth for mastication, and in preventing food from being driven down upon the gum, and decomposing in contact with the cervical portion of the filling. I would also point out that, although the edges of the cap slightly overlap the edges of the cavity, and thus would appear to some discordant with one of the chief principles of filling, if they are properly burnished no practical disadvantage is found to result. I would also ask you to regard the metal cap not as the filling, but as the shield of the osteo to protect its weak points.

In conclusion, Gentlemen, I beg to express my thanks for the attention you have given to my paper, and hope you will pardon any deficiencies in my attempt to describe a process which is still capable of improvement, and can only be made interesting by practical demonstrations.

NOTES ON THE DEMONSTRATIONS AT THE BERLIN CONGRESS.*

By Dr. WILLIAMSON.

I HAVE just put together a few notes on the demonstrations, in the hope that they may interest those who were not present.

The Dental School in the Dorotheen Strasse seemed a very conveniently arranged building, the rooms well lighted, and the dental furniture, such as the operating chairs, very good indeed. It was a pity that some systematic arrangement was not made in regard to the demonstrations, as they suffered considerably from the want of it; each demonstrator pitched his tent when and where he pleased, and there was a good deal of difficulty in getting patients suitable for the various operations.

The great crush was in the Extraction and Anæsthetic Room, owing, probably, to the fact of the exhibition of Bromide of Ethyl, an anæsthetic first used as such, by Nunnely of Leeds, as long ago as 1849, and which seems to have been taken up of late by many German dentists. As Dr. Silk, a London anæsthetist, remarks, in a letter to one of the journals, the conditions were such, that it was impossible to come to any satisfactory conclusions in regard to it The narcosis is certainly not profound, and the curious English translation of a paper in German, "Stunning by Bromide of Ethyl," seemed to give a more accurate description of its effects than was perhaps intended by the translator. One patient, for example, a youth of about twenty, struggled and plunged about, called out,

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* Read before the Odonto-Chirurgical Society of Scotland.

"Halten sie, halten sie;" but when quite conscious, half a minute later, ejaculated "Gar nichts," when asked if he had felt any pain. I could not help thinking that such an exhibition would be very demoralising to any chaperone or unprofessional companion of a patient in private practice. Prof. Busch, in reply to my question, said he certainly preferred gas to the Bromide of Ethyl. It is given much in the same way as ether, a facepiece being used, with a valve which is raised and the liquid dropped on a piece of flannel situated within the opening. A few weeks ago, a paragraph appeared in the *British Medical Journal*, giving a great number of untoward results from its use, including several deaths; and this fact of its not being so safe as was originally supposed, combined with the difficulty of obtaining and keeping it as a stable compound, will probably lead to its abandonment, or, at any rate, very partial use. The only other anæsthetic of a general nature that I saw used was gas alone.

There was one point in the matter of the operation of extraction itself which must have been quite novel to many, and that was, the manner of removing upper teeth. The operator stood at the back of the chair, the patient having the head well bent backwards, and, grasping the forceps with the handles farthest from him, pushed, or rather drew, the blades towards himself. In this country, the operator always, I presume, stands on the right side, puts the left arm round the head, the right arm being as close as possible to the body, and the forceps are held with the thumb directed towards the blades, resting on and partly between the handles, near the joint, helping the fingers to control the amount of pressure on the tooth. In the German method—or, perhaps, only the Berlin method—the head is not under such thorough control, and the outstretched position of the arm, combined with the position of the thumb, resting on one of the handles, just where they are widest apart, is sufficient to destroy, at any rate to a great extent, that tactile sense which is so necessary for the successful performance of the operation. A better view may perhaps be obtained, but certainly not any better practical results, if one might judge from seeing a few cases.

Passing to local anæsthesia in the case of sensitive dentine, there were two new methods exhibited, both by Americans. Dr. Curtis showed an apparatus for employing nitrous-oxide gas, by means of attaching a strong leather-cased piece of tubing to the bottle, the other end being fitted with a nozzle with tap for directing the jet of gas. It seemed to answer well in the only case I saw it used, but owing to the bottle being one of those where the gas comes off very irregularly, in sudden bursts, and there being no quieter attached, the operator was unable to keep the blast from going all over the mouth. It was also used for the painless extraction of a loose tooth; but here again the same unfavourable conditions combined with the extreme looseness of the tooth, prevented a proper conclusion being formed. The principle of its operation was said to be "dehydration," but how that can apply both to relief of sensitive dentine and the extraction of teeth, one cannot very well understand.

Dr. Niles showed a little instrument, the idea of which was to apply the vapour of alcohol to the cavity, and which is the invention, I believe, of Mr. Small, of Boston. A small piece of metal tube is filled with cotton wool saturated with alcohol, and slipped into a somewhat larger tube with a closed end, and a rubber cork prevents the vapour escaping. Through the closed end passes a fine piece of metal pipe with a bulb on it, and which bulb is heated in the flame until the vapour passes off. The nozzle is then held for a few seconds in the cavity, and the excavation proceeded with. Having some sensitive parts at the neck of my canines, I acted as patient, and it certainly removed the feeling when scraped with an excavator, but I did not see it used in any good case of the kind. Since coming home I have tried it on a few occasions, but my faith in its efficacy is not very strong.

In the matter of fillings, there were demonstrations with the electric, Bonwill improved mechanical, and hand mallets. The tin and gold combination, which seems to have taken such a strong hold in Germany, I did not see used, except by a student, I think, who was filling an approximal in an incisor with it—not certainly a very suitable place, but probably there was the question of cost. Mr. Brunton, of Leeds, in a distal cavity of a canine, demonstrated the method of using amalgam at the cervical wall, and finishing with gold. Then there was the new method of glass filling, which Mr. Biggs has demonstrated to-night.

In the way of crown work, there was a demonstration of putting on a Richmond crown, by Dr. R. W. Starr, of Philadelphia, who confines himself entirely to crown and bridge work, and whose name is well known on both sides of the Atlantic in that connection. As there were various points of interest in the methods employed, I hope you will pardon me for giving a somewhat minute detail of the operation. The tooth was a right-central incisor with a distal cavity, having an exposed pulp, and the distal corner broken off The operator stated that he never used arsenic except in cases of back teeth, and also that teeth may be cut off with hardly any pain without its use. The tooth was nicked on both sides, labial and palatal, with thin discs, and cut off with an excising forceps in the usual way. Then taking a hickory peg, one end whittled down to somewhat less than the size of the pulp canal, the point was dipped in carbolic acid and driven home with a smart tap, producing evidently little pain, the projecting end being then twisted off. (Since coming home, I have tried this method once or twice, and the results incline me to believe that where in a single-rooted tooth you have free access and a pulp canal free from secondary deposit, especially at the entrance, this is a much better method, because less painful, than the ordinary one of removal by a nerve broach. Dr. Harlan, of Chicago, a short time ago, gave his experience of half-a-dozen cases where he tried it, with the result that the majority of the patients left him, and some threatened him with an action for damages. These, however, were probably cases for filling, and the conditions much less favourable than when the pulp and pulp cavity are completely exposed, as in excision of the crown.) The root was trimmed entirely with the corundum discs, bevelling especially the palatal portion, which was not ground down to the gum level. The diameter of the root was then taken with wire in the usual way, but instead of cutting it at the lap, which is the direction in the books, it was cut opposite to it and the divided ends straightened out, the twisted portion thus forming a convenient handle. One of the ends of the wire being shortened by about one-sixteenth of an inch, a piece of coin gold, number 29 of the American gauge, and about one-eighth inch wide, was cut off, the ends placed edge to edge, and soldered in the Bunsen flame, forming the collar. This was then placed on the root, and, after a little adjustment, was forced up to fit tightly. It was then taken off, the gum edges bevelled, the sides being also filed concave, while the other edge was bent outwards slightly. Having been again placed in position, it was ground down to the level of the stump. A piece of plate of the same thickness as the collar was then placed on the top, held by a clamp and soldered. The superfluous plate having been trimmed off, the cap was finished and ready for adjustment. The root canal, with the remains of the wooden peg, was then drilled out deep enough for the pin, the end, however, of the peg being allowed to remain as a permanent apical plug, the operator stating that the pulp was literally displaced or knocked out by the peg,—quite a new light to me, who always thought that the invariable practice was to remove the whole of the peg along with the pulp, as soon as it had been driven up. The cap having been put on, a sharp point was forced through it, opposite the root canal. A piece of gold wire, in default of a platinum-iridium one, was then pressed through the hole in the cap, so that it was held tightly in place, and did not require the aid of wax to retain position. Taking the cap off, the pin was soldered, and the tooth was then fitted to the cap, the neck overlapping the gold in front, the whole of the adjustment being done in the mouth, so that there was no impression taken, from beginning to end. The tooth, cap, and pin were then put in a mixture of asbestos and plaster and soldered. To attach the crown, Dr. Starr used Baldwin's oxyphosphate cement, which he stated did not pack in pressing up into position, the excess oozing out readily and not requiring a vent hole. As to time required for such an operation, he stated that a few minutes over an hour was sufficient for most ordinary cases.

Dr. Melotte, of Ithaca, another well-known authority, made a small bridge of one tooth, a lateral incisor, where the root had been extracted. As this demonstration was carried on simultaneously with the one just mentioned, I was not able to follow the detail so closely. A very nicely fitting gold band was made to fit the canine which was sound, about one-eighth of an inch being the width shown in front. To the side of this, the backed tooth was soldered with a small spur on the other side, resting against the back of the central, also a sound tooth. There was another demonstration of adjusting ready-made gold crowns, of which, however, I merely caught a glimpse.

The operation of implantation, as usual, attracted great attention especially as its introducer, Dr. Younger, was the operator. The operation has, unfortunately, a sort of sensational side to it, and there seems to be a tendency on the part of its exponents to pander to that. I do not suppose that it was Dr. Younger's choice, but at any rate he was induced to use a bicuspid tooth of a mummy, the crown of which had crumbled off and was replaced by a crown of a natural tooth attached by cement. The root itself, I need scarcely say, was of that deep brown colour one finds in teeth whose age is measured by centuries. There was no possible reason for its use, except as I have just stated, and it seemed to be quite a degradation of an operation which is presumably a scientific one. In this case, no exception could be taken to the very neat manipulations of Dr. Younger himself, and which might be regarded as the redeeming feature.

Of mechanical dentistry proper there was little to be seen, Dr. Cunningham, of Cambridge, having it nearly all to himself, in his demonstration of a low heat porcelain gum, which has been since shown at Exeter. His knowledge of all the official languages enabled him to make the most of his auditors understand the process

Though not a clinical demonstration, I may perhaps add, in closing, that the exhibition of micro-photographs by Mr. Mummery seemed to be the most appreciated feature in the dental section.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The ordinary Monthly Meeting of the above Society was held on the 1st December. The President, Mr. Felix Weiss, L.D.S.Eng., in the chair, and a full attendance of Members.

The minutes of the previous Meeting were read and confirmed. Mr. Wynne Rouw, L.D.S.Eng., was admitted to membership Mr. W. J. Fisk, L.D.S., of Kilburn, was balloted for and elected. Dr. A. W. W. Baker, 18, Lower FitzWilliam Street, Dublin, and Mr. T. W. Harris, 10, Cavendish Place, London, W., were nominated for membership.

The Curator, Mr. Storer Bennett, reported that Mr. Phillips had presented to the museum three ancient instruments, viz., an old pair of forceps, an old elevator, and a double-action key with a handle.

Mr. Truman read a casual communication on "A Case of Eruption of a Canine Tooth under the Chin." The patient was a little girl, aged six, and had a left lower permanent canine erupted below the chin. The history of the case was that, three or four years ago, she had diphtheria very badly. When she was convalescent, about a fortnight after, the lower jaw began to swell uniformly and an abscess formed, discharging a good deal of pus. Soon after two teeth were extracted, liberating a quantity of pus, and a sequestrum separated, when matters seemed to quiet down. Subsequently, however, four pustules appeared on the chin; these burst, leaving sinuses, from which necrosed bone came away. Three of these healed, while from the fourth, eighteen months later, the left lower permanent canine appeared. Mr. Truman mentioned a specimen of a lower wisdom now in the Society's museum; also a case given in Mr. Salter's book, viz., both superior lateral incisors appearing in the nostrils. There was also a skull in the museum of the Royal College of Surgeons which showed the eruption of an upper right canine tooth into the nostril. Mr. Matheson had told him of two cases, one, that of Dr. Ward Cousins. In this a temporary left canine had become encysted in the left orbit, and, so far as Mr. Truman could understand, the tumour was removed. In another case under the care of Mr. Carver, of Cambridge, a boy, six and a half years old, had a canine coming through the right lower eye lid. This tooth had commenced to erupt at four and a half.

Mr. Storer Bennett said that it would be recollected that during the year of the presidency of Mr. Charters White a number of skulls and jaws of prehistoric man, taken from Wiltshire, were shown. One of them was the lower jaw of a child in which there was a partially developed lower canine inverted; the tooth had not pierced the jaw; the crown and a small portion of the root had been developed. The crown pointed downwards.

Mr. Morton Smale wished to say that three or four years ago they had a case at Westminster Hospital of a permanent canine erupting into the nostril. The patient's age was 17 or 18. The tooth was removed through the nostril. The important thing was to account for the tooth becoming inverted, and presenting itself in this position. So far Mr. Smale had not met with anyone who could satisfactorily explain it.

Mr F. Newland-Pedley mentioned having removed a canine tooth through the nostril. In that case the patient had a hare lip.

Mr. Wm. Hern stated that a little patient, the subject of hare lip and cleft palate, was now attending the hospital. He had seen the patient several times, and about six months ago removed a misplaced tooth. The case was similar to that mentioned by Mr. Newland-Pedley.

The President remarked that many years ago a lady came to him wearing an artificial denture, which she had worn for years. She had two canine teeth lying horizontally on the jaw. They were perfectly formed, and perfectly clean.

Mr. F. J. Colyer showed the model of a case in which the canine had erupted underneath the tongue. The patient, a female aged 35, had no history, and suffered no inconvenience.

Mr. Wm. Hern said that he had a model of a misplaced canine. It bore somewhat on the present case, inasmuch as the subject was a young woman who came to the Middlesex Hospital complaining of a looseness of a left upper lateral. Mr. Hern found that necrosis existed, and after removing the tooth and a small portion of the anterior wall of the alveolus he came upon a white hard body imbedded in the jaw in an oblique direction almost horizontally. Inasmuch as Mr. Truman's case was one which had a history of previous necrosis following diphtheria, it seemed to Mr. Hern that necrosis had been the cause of the tooth going wrong, of getting out of its socket and pointing under the chin.

Mr. W. H. Woodruff desired to mention two cases in his own practice which occurred one soon after the other. One, a canine growing in a horizontal position on the outer portion of the arch, and above the roots of the other teeth ; and the other growing quite up in the palate. In both these cases the patients were 70 or 80, and the abnormality gave no pain up to the time of consulting him ; at that time they began to give trouble. Fortunately he was able to remove both.

Mr. J. O. Butcher showed a device which he had originated in substitution of, and improvement on, the spring catch for holding engine arm. It was extremely simple, and conld be easily made. Its advantage was that there was no spring to get weak.

Mr. J. Ackery warmly commended the device, which he had first seen in Mr. Butcher's surgery, and had used ever since. He would not on any consideration go back to the spring catch.

Mr. Morton Smale by the desire of Dr. Brandt, of Berlin, showed two obturators designed by the latter gentleman, one for use in cases of congenital cleft palate ; the other to be used in cases where the surgeon had not been successful in curing the palate by the operation of staphylorraphy. The principle was that of a small indiarubber bag attached to the artificial palate, which is put into the mouth in a flaccid condition, and then inflated.

THE PRESIDENT remarked that their great advantage was that they were not likely to create irritation, but he should doubt their durability.

MR. MORTON SMALE said that they were so cheap that their durability was of no importance.

DR. B. W. RICHARDSON then read a paper on—

"THE CAUSES OF HÆMORRHAGE AFTER TOOTH EXTRACTION, AND THEIR IMMEDIATE TREATMENT."

Having remarked that during his practice he had treated from 120 to 130 cases without a single fatality, and having expressed a strong opinion that hæmorrhage is a much less frequent concomitant of tooth extraction than it was a quarter of a century ago—owing to the progress in dental skill and knowledge, and the fact that the blood of the nation has improved in quality—Dr. Richardson divided his subject under the heads of Cause and Treatment. There are three distinct conditions leading to dangerous hæmorrhage after tooth extraction ; (*a*) abnormal fluidity of blood—purpuric hæmorrhage ; (*b*) deficient contractile power of the divided vessels —vascular hæmorrhage ; (*c*) mechanical lesion following the flow of blood—mechanical hæmorrhage. Class (*a*) might be subdivided into the *aqueous* and *scorbutic* or *saline*. The pathological character of the aqueous type is special. The relative natural proportion of water to the colloided matter in the blood is disturbed ; the water is in excess, the cohesive attraction between the particles of the colloid is reduced, and the blood, imperfectly protected by the plastic fibrine, is ready at any weak point to escape. The patient knows that his blood will flow with dangerous freedom if he prick or cut himself, and he will say that members of his family who are scorbutic bled in a similar way ; he may not have any eruption, and may pass through life suffering only what is called the scorbutic diathesis. In these cases, if the skin be frozen in a small point by ether spray, the purpuric spot will follow, and Dr. Richardson had found this a valuable mode of diagnosis in the obscurer forms of the disease.

The eruption which accompanies most cases of aqueous purpura is in some not developed at all. Excess of alcohol or excessive mental or physical fatigue will induce it in those whose blood is in a favourable condition for it. The character of the eruption is distinctive—it is diffuse, irregular and faint, partaking of the character of a superficial bruise, but unattended by swelling. Purpura is among the most marked diseases of the hereditary type, and is generally diffused through a number of members of a family to an extent especially striking. Its remote origin would be found, in Dr. Richardson's opinion, to be central and nervous. Of two adult patients, one attributed the disease to severe fright during childhood; the other to sudden and excessive grief. Reasonable and clear evidence led to the inference that both surmises were correct, though how the blood can be physically affected by mental shock Dr. Richardson did not pretend to be able to determine.

If all patients who came before the operator carried with them the history of their case there would be no obscurity, but unfortunately it happens that no such previous history is supplied, and then the true typical case presents itself, of which Dr. Richardson quoted two examples. One, that of a man of middle age and full habit of body, who had a loose right wisdom tooth removed by Dr. Roberts of Edinburgh. The hæmorrhage, not more than usual, stopped before the patient left the house, the alveolus being plugged with lint wetted with camphorated spirit of wine. At 4.30 the same day the patient called again, the blood flowing in full stream from the alveolus. Plugging with lint, firm pressure with a cork, and astringent lotions staunched the bleeding. Patient now gave his history, viz., that he had had a tooth taken out before, and that there was then considerable hæmorrhage, which lasted three days but ceased on the application of caustic; he also reported that his gums had bled to a considerable extent, and often for a fortnight at a time. One day later Dr. Roberts was sent for and found that the bleeding had continued all night, and that there was neither clot in the alveolus nor in the blood which was spat out. Caustics, solutions of lead and alum and the actual cautery were applied with benefit. In the act of applying the cautery the second time the patient started, and the under lip was slightly burned. From the wound thus produced blood oozed freely for several days until indications of syncope supervened. Alternations of improvement and retrogression followed, until death terminated the case three weeks and two days after operation.

The second case was that of a young lady, aged 16 or 17, who had enjoyed the best of health and the advantages of wealthy parents and healthful natural training with abundance of outdoor exercise.

She had to lose a left lower molar, which was easily removed. Rather more bleeding than usual followed, but the patient being so free from any sign of ill-health, no notice was taken, and the hæmorrhage soon ceased of itself. The tooth was extracted about mid-day ; in the evening, in the excitement of dancing, blood began to flow freely from the alveolus ; it was red, but thin, wanting in plasticity, and free from clot. Loss of blood continued for many hours, until exhaustion and some cessation of hæmorrhage, due to weakened propulsive power of the heart, exhibited themselves. In this state Dr. Richardson succeeded in plugging the alveolus so firmly with styptic colloid on cotton wool that when the patient began to recover the bleeding did not return. Three nights later, during sleep, the patient by accident moved the plug in the alveolus, when the blood again flowed freely, but the bleeding surface was successfully sealed up with the same kind of styptic stopping during syncope, and the hæmorrhage did not recur. The patient herself afforded no external evidence of her peculiar diathesis, but her family history told the story ; her infant brother lost his life by the escape of blood from a small injury to the skin.

In *saline* purpura there is no deficiency of plastic matter, but an extreme fluidity due to an excess of soluble saline material in the blood. This condition may be produced by scurvy, and may be observed in advanced stages of alcoholic disease, and in choral *habitués*. There is no necessary history of hæmorrhagic or fluid blood, nor yet of hereditary diathesis, but there is always a history of induced morbid condition from error in diet, exposure to some noxious agent, or disintegration of blood from disease. The blood is fluid when taken from the body, but from it fibrine separates, and the corpuscles are shrunken and crenated at their edge. The specific gravity of the blood is high, and the specific gravity of the urine follows the same rule. The tendency in these cases is for the blood to exude from the soft spongy surfaces, as from the gums ; and if an eruption present itself it is in the form of maculæ or petechiæ.

Transudation of blood by the mucous secretions is not an uncommon diagnostic fact of this type of purpura. Venous murmur is also not uncommon as another point of diagnosis. Examples of hæmorrhage after tooth extraction from this class were rare in Dr Richardson's experience.

Class (b), Vascular Hæmorrhage.—Due to a want of contractile power in the blood-vessel or artery divided during the extraction of a tooth. The subjects are persons of enfeebled constitutional and nervous type, showing relaxed circulation in sudden blushing and suffusion of the face, with other signs of relaxed peripheral circulation, or they are anæmic, or alcoholic, or victims of specific degeneration. All these various types had come within Dr. Richardson's experience. In one instance of specific disease, such was the degeneration of the upper maxillary bone, palate and blood vessels, that *in extremis*, while the patient was in syncope, Dr. Richardson cut away the whole of the hard palate, and so reached the anterior palatine artery which was yielding the blood. He controlled the artery by torsion and stopped the hæmorrhage with a large plug. The patient is still living. In all cases of vascular hæmorrhage Dr. Richardson had been aided by the fact that the blood coagulated, which distinguished them from purpuric hæmorrhage.

Class (*c*), *Mechanical Hœmorrhage.*—This class is due to accident connected with the operation, fracture of alveolus or tearing away a portion of it. Cases of this class are extremely rare, and the treatment is the same as for vascular hæmorrhage. The worst example in Dr. Richardson's experience was one in which the tooth was anchylosed and so firmly adherent to its socket that nothing but removal of a portion of the alveolus could have secured the extraction. Hæmorrhage was profuse but controllable. No serious injury resulted.

TREATMENT. Under this head Dr. Richardson referred only to immediate treatment. In the first place, if a little of the blood caught in a glass goes into a firm clot in two or three minutes, much cause for alarm is removed, and the course to be followed is clear, for there is the assurance that the blood is in a favourable condition for forming a plug, and naturally arresting the hæmorrhage. Any one of three methods may be adopted, viz.: (1) The styptic. (2) The plug with pressure, with or without styptic. (3) The cautery. For convenience of manipulation, and for ordinary cases, Dr. Richardson did not know of a better styptic than styptic colloid, which can be applied on cotton wool, and a firm plug inserted with facility. When this did not seem sufficient he resorted to perchloride of iron. In the second plan, that of the plug with pressure, he had used three kinds of plug, but the best in his opinion was a gutta-percha styptic plug, consisting of G. P. discs, each disc being saturated with styptic tannin or perchloride of iron. These could be kept ready for an emergency, and easily softened in hot water, or a flame, so as to become very plastic for insertion in a cavity. The bleeding tooth cavity is quickly dried with absorbent cotton wool, then filled with one of these pledgets, which is pressed well down until it has become quite firm. No fear of putting on the styptic too hot need be entertained, since heat favours coagulation.

In *Purpuric Hæmorrhage*, presuming that the blood shows no tendency to clot, and ordinary styptic applications have failed, artificial coagulation must be resorted to. This may be effected by tannin and styptic, perchloride-styptic, or subdued actual cautery. The two former will to some extent coagulate albumen when not heated, and will instantly coagulate if heated to 150° Fahr. Should these fail, no time should be lost in applying the cautery, preferably the electric cautery. It should never be used at such a heat as to destroy structure ; the coagulating power of heat over albumen is all that is required, viz., 140° Fahr., but this may be safely exceeded by 50 or 60 degrees.

It is customary where the accident of hæmorrhage occurs for the operator or some bystander to administer some alcoholic stimulant. This, on strictly scientific grounds alone, is reprehensible ; it renders the patient excitable and nervous, relaxes the arteries, destroys the coagulating property of the blood, and above all increases the action of the heart, stimulating it to throw out more blood through the divided vessels.

Finally, with reference to the blood swallowed by the patient. This is not necessarily injurious, and should not be a cause of undue anxiety. The blood is digested and re-assimilated. If carried into the stomach in too large a quantity it is usually vomited without any serious danger.

DISCUSSION.

The PRESIDENT having invited discussion,

Mr. THOS. ARNOLD ROGERS referred to the fact that he had on some occasions to avail himself of Dr. Richardson's skill, and had done so with great advantage. He never extracted a tooth for any of the members of one family, of hæmorrhagic tendency, without first ascertaining that Dr. Richardson was in town.

Mr. F. NEWLAND-PEDLEY had listened to the paper with great interest. With regard to cases at Guy's Hospital, they had never hesitated to operate, even though a patient had been sent with a clear history of hæmorrhagic tendency. But at the same time, of later years, they had pursued a prophylactic treatment. In pronounced cases the treatment was to let the patient take perchloride of iron with Epsom salts internally for a week, and admit him or her to the hospital as an in-patient : by this means he was under observation, and had no access to alcohol. Pursuing this course, they had not had a single adverse case.

Mr. W. H. Coffin presumed that Mr. Newland-Pedley's observations were intended to enforce the importance of treating patients at their own homes.

Mr. Storer Bennett remarked that from time to time there were unfortunate cases of elastic ligature; the ligature having slipped from control, the periosteum would become stripped. Occasionally, the adoption of ligature was a very advantageous course. About four years ago they had in the hospital the case of a young man of distinctly hæmorrhagic tendency, with a tooth requiring removal. It was decided that the best way was to put a ligature round the tooth, and change it from day to day, forcing it further and further up the tooth, which was by this means extracted. Mr. Bennett chiefly rose to mention peroxide of hydrogen as a remedy for hæmorrhage. From time to time it was necessary to inject it up sinuses, and if in inserting a probe slight hæmorrhage was caused, the instant the peroxide was introduced, bubbles were given off and the hæmorrhage stopped. Having noticed this he had used a twenty per cent. solution for arresting hæmorrhage, with the result that the blood was staunched immediately. About six months ago, however, when resorting to the same remedy, it did not act as a hæmostatic. But although it did not always effect the purpose, it was nevertheless very useful, and it was desirable, if possible, to have three or four strings to one's bow.

Mr. R. H. Woodhouse felt sure it would not be the wish of the Society to narrow down the discussion to a means of arresting hæmorrhage. Dr. Richardson had mentioned the disappearance of scurvy, which was very prevalent 40 or 50 years ago. Mr. Woodhouse was inclined to attribute the disappearance in a great measure to the coincident increase in fruit importation, which was so great that oranges and lemons, which formerly had a very limited season, could now be had almost all the year round. He had himself seen one or two cases of aggravated scurvy successfully treated by a judicious and liberal system of diet. One case was that of a young midshipman on board ship, whose face and body were covered with patches, the teeth also were much affected, and the gums swollen. Nearly every dental surgeon had his favourite method of arresting hæmorrhages. He used styptic colloid, but not quite in the same way as Dr. Richardson ; if it were pressed too forcibly into a cavity it was apt to give considerable pain : he used it with an anodyne, and the best in his opinion was carbolic acid, not fully charging it, but having sufficient to be exuded when pressure was made. He believed that a great deal of the trouble which arose in endeavouring to arrest hæmorrhage, was due to pressure ; he found very light pressure sufficient. The socket of each fang should be carefully filled with the saturated wool, not with one general plug, but built up of small pieces, after the manner of a gold filling. All plugs of wool should be removed after a few hours, otherwise considerable inflammation followed, and became a cause of subsequent bleeding.

Mr. David Hepburn said Dr. Richardson had mainly referred to cases where a particular socket had to be dealt with. Those cases were the simplest. Those which gave the most trouble were the instances where practically no socket existed—where a loose tooth had been taken from a flabby gum, and where the application of a strong remedy would simply create a new source of trouble. Mr. Hepburn was of opinion that the less the gum was irritated by strong applications the better. In those cases where pressure might be applied, he had always found it desirable, in the first instance, to take an impression of the mouth before irritating the gum. Then apply a splint, which should be a permanent one. With the present means of rapidly vulcanising and packing upon a model, a splint of vulcanite could be turned out in an hour and a quarter. In these cases, he had found the greatest advantage arise, after preparing the vulcanite splint, from first enveloping the gum with lint saturated in perchloride of iron, and then applying the permanent splint and bandaging the jaw.

Mr. S. J. Hutchinson said that, in his judgment, there could be no doubt whatever that, where there was a history of hæmorrhagic diathesis, treatment beforehand was very desirable, and, in male patients, ergot of rye might be used with advantage. Unfortunately, it would be agreed, the history in these cases was, nine times out of ten, learnt after, instead of before, operation.

Dr. B. W. Richardson, in reply, adverted with satisfaction to the fact that peroxide of hydrogen, which had been referred to, was his own remedy, brought into use in 1856 for the treatment of diabetes, and afterwards for phthisis pulmonalis. Another gentleman had referred to styptic colloid, which Dr. Richardson introduced in 1860, and carbolic colloid, which is styptic colloid with 20 grains of carbolic acid to 1 oz. With reference to the action of peroxide of hydrogen, and the reason why Mr. Storer Bennett succeeded with it in one case and not in another, in the first place, he could not have used twenty volumes—it must have been ten volumes, because it was not practical to obtain the former quantity. The reason why it succeeded was that some makers, finding it difficult to obtain ten volumes even, added nitric acid. Robbins, who make the largest quantity for medicinal purposes, never put in nitric acid. Ordinary peroxide of hydrogen is not a styptic—it is only when changed in this way—so that Mr. Bennett's success was due probably to the use of an impure preparation. With regard to styptic colloid, he quite agreed with what Mr. Woodhouse had said, and also as to what he had said about carbolic acid. It did annul pain. He also agreed with Mr. Woodhouse as to the effect of fruit. There could be no doubt that fresh fruit did produce a good condition of blood. He had not seen the method of fixing plugs which Mr. Woodhouse spoke of, but it seemed a good method. With reference to putting back teeth, he had never either seen or heard of a successful case. It seemed to him to open the passage more than otherwise. Referring to Mr. Newland-Pedley's remarks, Mr. Pedley spoke of treating internally with perchloride of iron and sulphate of magnesia, and thought the case of the bleeding was a clear case of the purpuric condition. Was it really so? If it were, Dr. Richardson would be doubtful as to the effect of the remedy, because physicians did not find perchloride of iron of much use in such cases. With reference to Mr. Hutchinson's recommendation of ergot, it does not act as a styptic. Its effect is on the blood-vessels, which it contracted, whereas iron has a styptic effect. Which should be used would, therefore, turn upon diagnosis. Was it vascular paralysis or fluidity of the blood? Ergot, in the latter case, would be of no use. Amadou had not been very successful in Dr. Richardson's hands. He had used it alone, and moistened with a styptic. Mr. Hepburn's suggestion as to a model he thought a very good one, and he should have referred to it in his paper, because he had himself often employed a model of gutta-percha.

The usual votes of thanks concluded the Meeting

Odonto-Chirurgical Society of Scotland.

THE First General Meeting of the Society, Session 1890-91, was held on November 13th,—the President, Mr. JOHN A. BIGGS, in the chair.

After a few introductory remarks, the PRESIDENT vacated the chair and proceeded to give a demonstration on Dr. Richter's Glass Inlays. He showed several teeth with the work in various stages, from the prepared cavities to the completed inlays, many of the cavities being, for ordinary inlay work, very difficult. He also showed a canine tooth with a large cavity in the labial side, which he filled with an inlay in a few minutes. Mr. Biggs said he did not come before the meeting to advocate inlay work at all ; he thought it had not been sufficiently long before the profession to definitely say whether it would be permanent or not. His opinion was that the cement necessary for its retention would give way, unless in circular cavities. But he thought it would interest those who had not tried it, and therefore he had brought it before them. This kind of inlay promised much. It was rapid, simple, and effective. It was difficult to attain the desired shade, and required care and scrupulous cleanliness in its manipulation ; but the result could be achieved in a tenth of the time necessary in the use of porcelain inlays.

The demonstration was received with much interest, but, in accordance with the custom of the Society, the discussion was postponed till the following meeting.

Mr. WILSON exhibited an upper molar, the pulp of which had become calcified after its exposure through fracture. Also, the model of a lower jaw, showing suppression of lateral incisors with a good history, as the patient and her parents had taken considerable interest in the teeth not coming as they ought.

The Second Ordinary Meeting of the Society was held on the 11th Nov. The President, Mr. John A. Biggs, in the chair.

Mr. W. E. Satchell, L.D.S., Elizabeth Street, Hyde Park, Sydney, N.S.W., was balloted for and admitted a member of the Society.

At the instance of the President, Mr. William Dall, L.D.S. (Glasgow), proceeded to read a paper, entitled "A method of preventing upper and lower dentures from slipping forwards" (with demonstrations). (See page 1.)

Dr. Smith said he was unfortunate in not arriving soon enough to hear the first portion of Mr. Dall's interesting paper. He was much interested and favourably impressed with the mode of practice, however, as shown in the two cases exhibited by Mr. Dall. The presence of metallic bodies in living tissue had been for some time recognized as being remarkably well tolerated in comparison with organic materials, as was well illustrated in surgical practice, where metallic sutures—needles of different kinds, and various other appliances—were borne with impunity as contrasted with other materials, as well as in those cases where the presence of such bodies as fish bones created so much greater irritation than pins or needles, or the like. This seemed to explain the absence of any irritation of the tissues from the continuous presence of the metal pins used by Mr. Dall in the manner he had described. Dr. Smith would like to ask him, however, whether in the case of these pins being at once introduced into the empty sockets, from which teeth had been newly extracted, the denture to which they were attached was kept at rest in the mouth for such time as would allow the deposit of new bone round the pin to take place. In those cases where the hole had been drilled in the maxillary border, this, of course, might not be required, and with the precautions enforced by Mr. Dall against impinging upon the inferior dental nerve, or entering the antrum, the procedure seemed more simple. From the spot preferred for drilling by Mr. Dall, such accidents appeared less likely to occur. But even in a healthy antrum, where the nasal outlet had not been obliterated by the existence of diseased action, as was so frequent where the affection was of much consequence, or not merely transitory in its nature, the opening made in the maxilla would probably soon be capped over and closed. He thought, however, that where the drilling took place in the neighbourhood of the canines or bicuspids, neither of the two contingencies would occur in any great number of instances.

In reply to Dr. Smith, Mr. Dall had only to say that where the pins entered the sockets of extracted teeth, the patient was requested to wear the denture constantly, removing it only for cleansing purposes. In cases where the holes were drilled they were also requested to do so, unless the part drilled became tender and sore, which might occur during the first two or three weeks, when it was better to remove the denture, for a night occasionally, but this was seldom required.

Mr. WATSON said: This method of Mr. Dall's for the retention of plates in the upper and lower jaw in difficult and troublesome cases, was, he thought, an extremely ingenious and valuable one. The only danger he saw in connection with the operation of drilling the holes, was the fact that in the upper jaw the wall of the antrum might be perforated, and in the lower jaw the inferior dental canal, which often assumed a very erratic course, might be opened into and the nerve injured, leading to serious results. The operation would therefore require to be undertaken in a very careful manner, and would necessitate the patient wearing thin plates constantly, otherwise the holes, from what he had observed in antrum cases, would speedily fill up.

Mr. MACLEOD said: I have been much pleased at the masterly and complete manner in which Mr. Dall has brought this "new departure" under our notice, and I am quite prepared to accept his conclusions with confidence, as they run parallel with my own experience in a course of procedure involving the same principle, viz., "the tolerance of healthy tissues to the presence of a foreign body, providing that it is non-absorbent and has a polished or smooth surface." For some twenty years past I have been in the habit, when circumstances were favourable, of inserting dentures for temporary use, with the artificial teeth passing deep into the sockets of the extracted roots. What I did and do is to take an impression of the mouth as it is presented to me, then on the model from the impression I remove with a small round sculper the broken down teeth, and dig into the root spaces as represented on the model, making as near as possible a fac-simile of the empty roof sockets, which will exist in the mouth when the teeth are extracted. I fit the teeth right deep into this artificial socket, and finish the case ready for the next visit of the patient. The teeth are then extracted, and the case put in before the patient rises from the chair. This, with the exception of being taken out for cleansing purposes, is worn continuously for a fortnight or thereby, by which time the wounds are nicely healed, and gathered round the artificial root. The patient may then use discretion as to whether the case may be worn constantly, or removed during the sleeping portion of the twenty-four hours. This is a most excellent and satisfactory way of treatment for patients whose business is of a public nature. This method is only for temporary service, twelve or eighteen months; but it admits of immediate insertion and keeps up the appearance: absorption goes on all the same, but it goes on behind the labial aspect of the roots. Mr. Dall's method is far in advance of this, and is especially advocated for permanent dentures in the under jaw, where alveolar border is narrow or flat. The upper jaw will less frequently call for treatment in this way. I congratulate Mr. Dall on his originality. I congratulate him on his success, and I am sure all of us can congratulate and thank him for bringing this subject before us in such a complete and satisfactory manner.

The PRESIDENT said: The paper just read and demonstrated before them was rendered most interesting and instructive by the illustration given by Mr. Dall, with the models, dentures and dissected jaws, but much more so by the presence of the two patients who came with him from Glasgow, and in whose mouths they witnessed the practicability of his scheme. The idea of anchoring cases of artificial teeth in an edentulous mouth by means of gold pins or dowals was by no means new, he himself having suggested it at least twelve years ago to Mr. Alexander Cormack, and whose late assistant, Mr. John Turner, now present at this meeting, could corroborate this statement. He had frequently endeavoured to induce patients to have it done, but was unsuccessful in his persuasions, and therefore he had never carried it out Mr. Macleod had also shown that he was on the same tack, and had in a way attained a similar result to that of Mr. Dall. It was a matter of surprise how they all three had been imbued with the same idea, but to Mr. Dall alone fell the honour of perfecting it or carrying it to a proper issue. He thanked Mr. Dall on behalf of the Society for his excellent paper, and he felt they were much indebted for his kindness in bringing the subject before them, and allowing them to participate in the remarks attendant upon his success.

DISCUSSION UPON MR. BIGGS'S PAPER, READ AT THE LAST MEETING, ON "DR. ROBT. RICHTER'S GLASS INLAYS."

The SECRETARY read the following communication he had received from Mr. Frederick Rose (Guernsey):—

Mr. FREDERICK ROSE had some years ago practised the inlaying of porcelain in the method described and so admirably demontrated recently by Mr. Dall, but had of late discontinued it on the score of the time and labour it involved. For the last eighteen months he had adopted a different plan, one, which in its main issues had been coincidently taken up by some one in America, from which, however, his method differed in detail. He took about six composition impressions of the cavity, which he had previously made as cylindrical as possible, and filled up any undercuts temporarily with gutta-percha. The composition was made up into small cylinders and allowed to harden—then one end was softened over a spirit lamp and pressed into the cavity. He then used a mixture of ten parts Plaster of Paris (superfine), seven parts of pumice (superfine), three parts powdered silex (very fine), with which the models were cast. This produced a substance which, when taken out of the furnace, was very hard, yet sufficiently pliable to cut with a sharp penknife. He mixed with water on a palette and carefully cast one model at a time, using the mixture very thin, but not infrequently one or two of the models were a little spoiled with minute blow-holes, but there were usually sufficient left to work to. The composition was next taken off with heat in the usual way, which required great care, then with a piece of cane sharpened to a point he slightly enlarged the orifice of his cavity to allow for shrinkage of the porcelain--into this cavity the porcelain was packed wet with burnishers, and contoured as desired. This latter process is facilitated by putting a scrap of isinglass in the water (distilled), which should be used warm. He used four distinct shades of the powder, which could, with a little practice be so blended as to produce shades to match any teeth. Then with the flux he obtained from the depôts, and of the latter (the flux) only a *soupçon* was required, otherwise a porous body was the result. The firing could be done in any suitable furnace, where sufficient heat was obtainable—he now used a very minute one, made by himself of platinum. This with a little model inside was laid upon the coke, the lid closed, and the flame of a Fletcher's blow-pipe directed upon it, to which he had attached an arrangement for combining nitrous-oxide gas, from an ordinary iron bottle, In this manner the largest inlay can be fired in from five to ten minutes. The inlay is allowed to cool in the furnace, and then removed, scraped, and finely smoothed with corundum and Arkansas stone. Usually the cavity required slightly enlarging with a stick of corundum in the engine, and then smoothing. Finally the inlay was cemented into the cavity with thin fossiline. Out of many dozens he had only had one that had come out unsatisfactorily, and that required renewing, and usually the appearance of the perfected inlay was most gratifying. Any cases were suitable for this work where an impression of the cavity could be taken, and the result found strong and durable, even to the tipping of centrals, broken by a fall, where a deep countersink could be obtained. For cavities where strength was not requisite, powdered diatoric teeth gave satisfactory results, but for such cases he had now taken up Richter's glass stoppers, with which he had been much pleased, and he had often done two simple cases in an hour, including the preparation of the cavity. He will endeavour to get time to prepare a few specimens by our next meeting.

Mr. Girdwood said: He was sure they all felt very much indebted to the President for the excellent paper and demonstrations which they had from him at the last meeting on glass inlaying.

The subject of glass inlaying was one of the most important which had recently been brought forward in the field of operative dentistry and until the ideal filling was discovered, it would continue to occupy an important place as a means of filling teeth.

At present, the appearance of glass inlays was not all that could be desired, but, no doubt, great improvements would soon be effected where glasses were obtained which would come true to colour.

A doubt had been expressed about the durability of that kind of work. His somewhat limited experience in porcelain inlaying led him to the belief that it was one of the most durable methods of filling, and he was further supported in this by the experience of others.

For instance, in speaking of porcelain inlaying in his book on operative dentistry, the late Marshall Webb said that porcelain inlays were, next to good gold fillings, the most lasting operations; while others had given a similar opinion on the subject. Dr. Essig agreed with Marshall Webb, and his (Mr. Girdwood's) partner, Mr. Stewart, who had been in the habit of doing porcelain inlays for the last six or seven years, found them last extremely well. Therefore, he thought they might safely presume that they were likely to be at least as durable as the majority of operations for the preservation of the teeth.

Recently when in America, his friend Mr. Finlayson and he had had the good fortune to see some glass inlays which were sent over by Mr. Bruce, of Melbourne, who was then in Germany with Dr. Herbst. The excellent colours and accurate fit of these inlays were remarkable.

Mr. Bruce had an article in the November number of the *International Dental Journal* in which he described the Herbst method, and to those members present who did not care to experiment with the

Richter materials he would suggest a trial of the Herbst method, which promised to give excellent results and was very economical.

Briefly stated, the Herbst method ran thus: the cavity was prepared in the usual manner without undercuts, it was then lined with a piece of No. 60 gold foil, which was pressed into place either with rubber or as Mr. Biggs described in his paper; a piece of hard wax was then pressed into it, and the gold and wax removed and invested in plaster and pumice; the wax was then run off with boiling water, and the gold matrix was ready for the glass powder which was to be added, as given by Mr. Biggs; the glass was now fused with a mouth blow-pipe, and to prevent discolouration a Bunsen burner was used. The glasses required were obtained from beads of various colours finely powdered in a mortar. White, brown, yellow and blue were all that were necessary. Mr. Bruce recommended the use of one standard colour, which could be altered by adding any of the four to match any shade. About four or five months ago he had tried this method, but with no great success for several reasons: firstly, he did not work with the proper kinds of glass; secondly, he found it difficult to prevent discolouration because he used an ordinary blow-pipe. But since the last meeting he had taken hints from Mr. Biggs and Mr. Bruce, and had adopted the method recommended by Mr. Biggs, but applied it to Mr. Bruce's glass. Not having any platinised foil, he had used No. 4 cohesive gold foil folded to No. 64. He had inserted two inlays (both labial cavities in canines) that week; he had done them by that method and found it answered admirably. A little practice was necessary to get the correct shades; but proficiency in mixing the glasses was easily acquired. The colours, too, seemed to be more stable than those of the Richter glasses, while another advantage, and a great one, was that these inlays could be ground and polished after they were set in the tooth.

Mr. Girdwood here handed round an inlay, which, he said, having been done in gas-light, was but a poor specimen of what could be done with glass.

Mr. Biggs thanked the gentlemen present for the remarks they had been good enough to make on his communication of Dr. Robert Richter's inlays.

He begged them to bear in mind he did not advocate the system, but merely brought it before them as a feasible mode of filling exposed cavities; he thought it the province of the younger men to take up such subjects, and ascertain what was their real value. He was glad

Mr. Girdwood had done so, and had given them such an able and exhaustive opinion with regard to glass inlays, and thanked him for the specimen he handed round. It was very good of the Secretary to procure the communication he had read to them, and altogether he could not but conclude that the matter was worthy of further investigation, and if it could be proved to last satisfactorily, it would certainly be the solution of the inlay difficulties.

Mr. Macleod said that their attention had been so absorbed by Mr. Dall's brilliant comunication, that the ingenious method of overcoming the slipping forward of "unders," devised by Mr. Lennox, of Cambridge, had almost been overlooked. He had much pleasure in moving that the thanks of the Society be accorded Mr. Lennox, for his kindness in placing an example of his device before them for their inspection. It carried a pregnant hint of how members might overcome similar difficulties when they came under their professional treatment.

Dental Students' Society, London Dental Hospital.

The Ordinary General Meeting held Monday, November 10th at 8 p.m., Mr. Leonard Matheson, President, in the chair. The minutes of the previous Meeting were read and confirmed.

The following gentlemen were balloted for, and elected members of the Society:—Messrs. Farebrother, Hankey, Gillett, Gardner Weston, Stevens, Townend, Tomlinson, Morley, Tisdale, Danolds, Paris, Steele, Ranken, Mordaunt, Moseley, Fouraker, Gabelle, Simmons, Sexton, Baker, Ashby, Miller, Fluton, Baley, Prideaux, Walker, Northcroft, Goodman, and Taylor. Messrs. R. Bulgin, and E. A. Curtis signed the obligation book, and were formally admitted to the membership of the society.

On casual communications being called for, Mr. Coysh related the history of a case of necrosis of a portion of the alveolar process of the upper jaw, presenting the sequestrum removed to the Society's museum.

Mr. Moseley presented to the Society a model showing a supernumerary wisdom tooth, erupted to the outside, and posterior to the second upper molar.

Mr. Balding presented to the Society specimens of erosion and exostosis.

Mr. Rilot read a letter from Mr. George Seymour, presenting two specimens to the Society: one was a broken down upper molar, through the apex of the root of which a bristle from a tooth-brush was sticking. The presence of this bristle had caused an abscess, and necessitated the removal of the tooth. The other specimen was an upper wisdom tooth with abnormally curved roots.

After having read the paper of the evening [see p. 4], Mr. Gardner exhibited to the Society a series of specimens and models, illustrating the different stages of the process described.

The discussion upon Mr. Gardner's paper was opened by Mr. Matheson, who thanked the author most heartily for the great trouble he had taken in preparing both the paper and the specimens. He thought that the process of capping osteo fillings which had been described, was eminently practical. He would, however, prefer the term "partial crowns," as this did not restrict the nature of the filling which was covered in by the cap. Mr. Gardner had brought this system to a greater state of perfection than he had before seen, though the process was not quite original. Judgment as to the durability of these "partial crowns" must be reserved for the present, as all Mr. Gardner's cases had been comparatively recently treated.

Mr. Bull thought that this mode of treatment laboured under the great disadvantage of leaving an edge, especially at the cervical margin of the cavity. He did not agree that amalgam fillings were inartistic if properly inserted and finished. With regard to the remark that patients preferred the look of gold to amalgam, he considered that we should act as we thought best for the patient, and not be guided by personal prejudice.

Mr. Schelling thought that gutta-percha would be far preferable to an osteo, to place beneath the gold cap, as the thin layer of gutta-percha between the tooth and the cap would be much more likely to last than a similar layer of osteo.

Mr. Preedy agreed with Mr. Schelling that gutta-percha would be a better filling for the purpose than osteo.

Mr. Coysh quoted the experience of a writer in the "American System of Dental Surgery," to the effect that the film of osteo between the tooth and the cap had been found perfect after four years' wear.

In Mr. J. F. Colyer's opinion, every possible source of future caries should be avoided, in treating large sensitive cavities, and such an aid to the re-appearance of the disease, he considered, would be found in the edge left by the cap on the cervical margin of the cavity. He had seen one case which was not a success. The patient had been wearing the cap for four months, and it was then quite easy to pass a probe right under it. Mr. Colyer removed the cap, and had brought it to show at the meeting.

Mr. MATHESON thought the fault in this case was with the individual work, and not with the general system. The cap had no tags, and was badly finished altogether. He did not consider that it was at all the kind of thing which Mr. Gardner had been describing.

Mr. RILOT had found that a thin film of osteo, such as was present in these cases, was more durable than an entire filling of the material. He thought that these "partial crowns" had much the same advantages and failings as whole gold crowns, and as the latter had been tried, and found a success, so would the former; of course they must be used only in suitable cases. He could not agree, however, with those who had recommended the system on account of its simplicity.

Mr. MAY did not consider that it was always an advantage to restore the original contour of a tooth. As Mr. Matheson had pointed out in a recent paper read before the Odontological Society, it was often more advisable to leave a V-shaped opening between the tooth being treated and the next to it. He had found Mellor's moulding composition exceedingly good for taking impressions of the cavity and tooth.

Mr. GARDNER then briefly replied to the various speakers, after which Mr. Matheson tendered a vote of thanks to him for his paper, and to the gentlemen who had brought forward casual communications.

The PRESIDENT then announced that the next meeting would be on December 8th, when Mr. W. S. Holford would read a paper on "Various Diseases that Influence the Teeth."

The meeting then closed.

Dental News.

GENERAL MEDICAL COUNCIL.

THE CASE OF THOMAS HAWKINS.

The President, Mr. John Marshall, in the Chair.

The REGISTRAR: Thomas Hawkins, registered in the Dentists' Register as in practice before July 22nd, 1878, has been summoned to appear before the Council to-day on the following charge, "That on the 25th day of June, 1889, he did fraudulently procure himself to be entered in the Dentists' Register as a duly qualified dentist in practice before July 22nd 1878, he not having been in practice in accordance with the statement and declaration whereon he founded his claim to registration, and he not having any qualification. Thomas Hawkins has been called, and he is not here The Report of the Dental Committee on the case is as follows:—

Report by the Dental Committee on the Case of Thomas Hawkins.

The case of Thomas Hawkins having been referred to them by the Executive Committee to ascertain the facts in regard to such case, the Dental Committee find the facts to be as follows:—

That Thomas Hawkins was, on June 25th, 1889, registered under the 37th section of the Dentists' Act on the usual form of request for registration, dated May 9th, 1889, and supported by the joint declaration of himself and David Holland, and a copy of his indentures of apprenticeship, from which documents it appeared that he was duly apprenticed on December 1st, 1877, to David Holland, at 71, Alexandra Road, Manchester; that his services were to be an equivalent for a premium; that he duly fulfilled all the conditions of his apprenticeship; and that his articles expired December 1st, 1881, when he was forty-five years of age.

That David Holland, the declarant above mentioned, was born on the 12th day of December, 1859, and was therefore on the 1st day of December, 1877, of the age of 18 years only or thereabouts.

That Thomas Hawkins, during the years from December, 1877, to December, 1881, was working as a carpenter and joiner, and in particular during the years 1877 and 1878, or one of them, was employed by the Audley Brick Company to do the joiner's work in a row of houses they were building at Church, near Accrington, and that during that time he resided at 2, Newark Street, Lower Audley.

That in March, 1879, he worked regularly on buildings at Hapton, which he was putting up in conjunction with one William Bullock, during which time he lived at Burnley Road, Huncoat.

That he continued to work as a joiner up to and after December, 1881.

That in November, 1885, he entered the service of a Mr.

Nuttall, of Bacup, as a canvasser and collector, and continued there till October, 1888, and during that time never assisted in Mr. Nuttall's dental practice.

That David Holland, the declarant, whose proper name is David Cooke Holland, was in 1877 living with his brother, George Holland, at Blackburn, and was learning dentistry from the said George Holland; and that in September or October, 1878, the said declarant came to 71, Alexandra Road, where for the first time he began to practise dentistry.

That David Holland had no apprentice while he lived at 71, Alexandra Road, which was from the autumn of 1878 to the year 1885.

The Dental Committee report these facts to the General Medical Council. JOHN MARSHALL,

November 27th, 1890. *Chairman.*

Mr. Farrer, solicitor to the Council, attended, and Mr. Muir Mackenzie was also present as legal assessor.

MR. FARRER: I first hand in ——

Dr. QUAIN: I move that strangers withdraw.

The PRESIDENT: Not on the facts.

Dr. QUAIN: You cannot question the facts.

The PRESIDENT: It is a question of practice. The Dental Committee were appointed in order to investigate the case and find the facts. The Dentists' Committee having all the facts before them, have agreed to report them to the Council; they have gone into the facts thoroughly, so that unless the Council wishes to impose its judgment and go into the facts for itself, I think we are in a condition to decide on those facts.

Dr. QUAIN: If there is no dissension the case is closed, and strangers are not to be present while it is discussed.

THE PRESIDENT: Has it arrived at the stage at which this Council is satisfied to receive the report?

Mr. FARRER: I hand in the duplicate summons, and also some letters which passed.

Strangers were then directed to withdraw.

On their re-admission—

The PRESIDENT said it had been resolved on motion put from the chair, "That the Council having considered the facts of the case of Thomas Hawkins, as submitted by the Dental Committee find that the entry of the name of Thomas Hawkins in the Dentists' Register has been incorrectly and fraudulently obtained, and they direct that the name and qualification of the said Thomas Hawkins be removed therefrom."

STUDENTS' SOCIETY OF THE DENTAL HOSPITAL OF LONDON.

On Monday, December 15th, the above Society held the first of a new series of meetings, at which it is proposed to exhibit cases of interest, to give short practical demonstrations, &c., the meeting being to a great extent of a conversational kind.

The success which attended the first meeting augurs well for the future, and those present felt that a step had been taken in the right direction.

Briefly, the following composed what might be termed the work of the evening.

The meeting was held at first in the Stopping Room, and here were exhibited several interesting cases of irregularity, a case of epulis, removal of maxilla, boy with Hutchinsonian teeth. On all these cases the President of the Society gave short demonstrations. In addition to the above, Mr. Ladmore very ably showed the manner of making instruments, and his efforts were fully appreciated by an attentive circle of sightseers. Those present hoped that they might have another opportunity of seeing Mr. Ladmore there.

Mr. Gask demonstrated the injection of cocaine, and Messrs. May & Colyer filling root canals with (1) gutta-percha, and (2) osteo.

Microscopes were exhibited, and specimens showing dental tissues exhibited. After examining the various patents, &c., the meeting adjourned to the "Lecture Theatre," for the purpose of discussing the demonstration and cases, the President opening the discussion by reviewing the various cases, &c., dwelling upon points illustrated by them. Besides the President, Messrs. Ackery, Lloyd Williams, Coysh and Colyer took part in a discussion upon root filling.

Altogether a very pleasant instructive evening was passed, and it is hoped that like success may attend the future ones. The next one is to be held on Monday, January 26th, the Annual General Meeting being on the previous Monday.

APPLIANCES, &c.

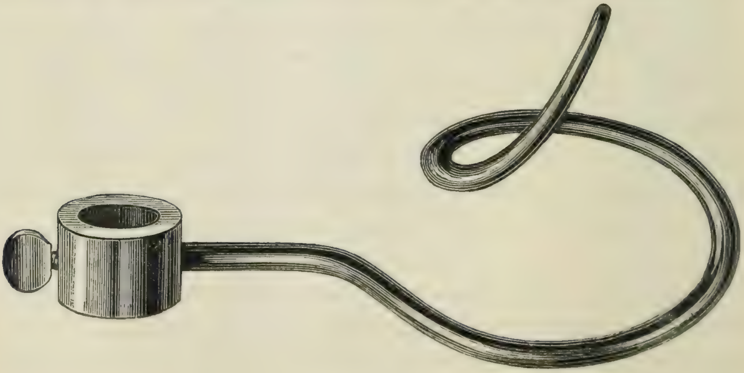
DENTAL SURGEON'S DAY-BOOK.

We have received a copy of a newly designed Dental Surgeon's Day-book, intended to meet the needs of *busy* dentists, and it seems to us admirably adapted for that purpose. Those practitioners who have no inclination for accountancy, and no desire for a systematic record of receipts and expenditure, household and professional; who are content with a record of professional services rendered, will find this book invaluable. Those who *do* keep systematic accounts, will find that by totaling the "fee paid" column weekly or monthly, as suits their convenience, and carrying these totals to an "Income" or "Profit" account in their ledger, they will be able to see at a glance what their earnings are. Patients' accounts, if ledgerized, may be carried from day-book to ledger in the same way, the day-book being folioed. Separate columns are provided for date, name, address, fillings (sub-divided into gold, amalgam, white and various), teeth scaled, teeth extracted, anæsthetics, sundry operations, fee (sub-divided into amount, paid, balance), and remarks. The book is on best machine-made paper, is well and strongly bound, and has space for 3,500 patients.

The Dental Manufacturing Company, Limited, have these books in stock, and will be happy to forward specimen sheets on application.

SPIRAL ENGINE-ARM-HOLDER.

We have also received from the Dental Manufacturing Company, Limited, a Spiral Engine-Arm-Holder, designed by Mr. J. O. Butcher, L.D.S.Eng., (see page 18). The device is extremely simple and equally useful. It is intended as a substitute for the Spring Clip, hitherto supplied with Dental Engines. Those who have used it express a strong preference for the Spiral Holder, and would not upon any consideration revert to the Spring Clip The former holds the arm in its natural position, and has the advantage that there is no spring to get weak.



REDUCTION OF FRACTURE OF SUPERIOR MAXILLA.

Mr. J. C. Walton, D.D.S., gives the following in the *Ohio Journal of Dental Science*. A farm labourer was kicked by a horse, two central incisors were knocked out, the right lateral broken and the alveolus fractured above the incisors, while an extensive fracture of the jaw extended back through the left superior maxilla, involving palatine process, nasal and malar bones. Two days later the swollen distorted features permitted us to see a little of one bloodshot eye. The face was bruised everywhere. The mouth could not be touched without eliciting a groan. Chloroform was administered, the jaws forced apart and held so with wire hooks while impressions of both jaws were taken with modelling compound. Uncut model shows well the line of fracture through the hard palate, also how the incisor end of the broken piece was up and the molar end down. The model was cut on the line of fracture, the articulation restored and the pieces fastened in position, after which the splint was made of vulcanised rubber. To ensure the easy passage of the splint to place, the teeth on the restored model were covered with tin foil (No. 60) before packing the rubber. The splint was placed in position next day. A piece of binding wire from an anchor screw set in the cuspid at the gum line, and another from the screw in the splint were crossed and twisted with pliers to bring the piece into position in front. The lower jaw was held firmly against the splint by a skull-cap bandage. The piece could not be forced into position at this time. The incisor end pulled into position the following day, but the molar end was never forced fully up to place, probably on account of comminuted bone.

In spite of threatened complications and alarming high temperature the patient recovered, union taking place quickly. No trouble occurred with the fractured alveolus. Sixteen days after adjustment the splint was taken off, the patient riding in seven miles for this purpose. A few days later the lower third molar was removed and the other molars ground with a corundum wheel to accommodate the molars of the fractured piece. The root of the broken lateral has since been removed, absorption has gone on as usual with the alveolus, and except a little abscess at the bridge of the nose and hard palate there has been no discomfort with his jaw.

THE DENTAL RECORD, LONDON: JAN. 1, 1891.

DENTAL REPRESENTATION ON THE GENERAL MEDICAL COUNCIL.

An additional argument, were one needed, has been given by the case of Hawkins, discussed before the General Medical Council, why dentists require a representative upon that august body. To us it is simply an unanswerable argument that a body of men, as numerous as the Register shows our profession to be, which possesses a special curriculum, a special series of legislative enactments, an independent Register, and last, but not by any means least, a Dental Fund, out of which dental affairs, conducted by the General Medical Council, are paid for, should have the right to send its own representative to the Conncil. As matters stand at present it is a question if a dentist, Mr. Charles Sismore Tomes, let us say, gets in; and his getting in means two things. Firstly, that a large number of medical men, influenced by dentist friends, will vote for him; and, secondly, that the number of purely medical men upon the Council will be lessened. Neither of these things should happen. Every dentist holding a diploma should have a vote in the election of officers, who, amongst other duties, conduct their —the dentists'—business, and manage affairs of the most vital importance to them. And again, if the medical men are represented by too small a number of persons, why not increase the number of members of the Council? The arguments advanced against electing a dental representative have been singularly futile, alike as examples of deductive reasoning and of common-sense comment. It is said if a representative of one specialty be admitted as such, why exclude the spokesmen of others. If you elect a dentist, why not a gynæcologist, an ophthalmic surgeon, and, piling the Ossa of scorn upon the Pelion of contempt, why not a certificated nurse? It is a conspicuous fact that the late Dr. Matthews Duncan was a specialist, combining in his person the interests alike of gynæcologists and monthly nurses, while Mr. Brudenell Carter is a well-known specialist in ophthalmic surgery. We have taken two members of the Council as it existed before the lamented death of Dr. Matthews Duncan, who as specialists should not have been placed upon the Council. But it will be said they owed their positions to another *raison d'être* than that of specialism. Granted, but special questions were always referred to them; and dentists are quite content to accept a candidate who, while he is a medical man, yet knows dentistry and its truer interests, and such a one can only be found in their own ranks. But of course the answer to this objection is that dentistry is quite upon a different footing from ophthalmic surgery, gynæcology, laryngology, *et hoc genus omne*, since these specialities possess no special Register, no special diploma, no special curriculum, any more than has a physician who attaches himself to a fever or small pox hospital—their interests are wholly at one with those of the general body of medical practitioners. Not so the dentists; they go into domains wholly outside the teaching of general hospitals and their special departments, and have interests which cannot be known or appreciated by any save one of themselves. The only speciality of medicine which at all runs on all fours with dentistry is that of State Medicine, and that has an elaborate representative body in the Board of Health, and can bring the still higher interest of the House of Commons to grapple with the questions of which it takes cognizance. Still, as matters at present stand, we must walk before we can run, and as there appears no earthly likelihood of our obtaining a representative *causâ honoris* of dentistry, we must do our best to get one by any means in our power, and those means were pertinently suggested by Mr. Morton Smale, when he said, "Let every dentist induce each of his medical friends to give one of his three votes to a dentist candidate." This do. Let us be clear in our own minds why we need a representative. It is that we may have a say in all questions concerning our Register, admissions thereto, and deletions therefrom; questions touching upon our curriculum; those dealing with the prosecution and punishment of offenders against the dental Acts of Parliament; the management of the Dental Fund. Union is everything, let us promptly decide who shall represent us, and then let every dentist write to and see any medical man he may know, and put all the pressure he can upon him in the right direction. There is, however, another way whereby we could obtain a representative, and that is, by the election of a dentist to fill the next vacancy among the Crown nominees. Such a vacancy is likely to be created before long, and it is above all things important that all influence, direct or indirect, should be brought to bear in the right quarters to get a dentist appointed. *Verb. sap.*

GOSSIP.

Professor Robert Koch is a man still on the right side of fifty. He was born on December 11th, 1843. A native of Klausthal, in Hanover, Koch studied at the University of Gottingen, and after graduating was appointed an assistant-surgeon at the General Hospital of Hamburg. In 1872 he began bacteriological study. He was then acting as a district surgeon, but he was very soon promoted to be a member of the Imperial Board of Health, for which his growing reputation as a bacteriologist had naturally singled him out, Koch first pointed out the colour method for the detection of micro-organisms, he having noticed that one organism may be coloured by a dye which does not affect others, or degenerated tissue, so that he, by this means, established a process of selection not otherwise possible. By the method Koch discovered the tubercle bacillus in 1882, and some time later the "comma" bacillus, believed at one time to be the specific organism of cholera. This disovery was made while he was acting as director of the German Cholera Commission, which visited Egypt and India. Professor Koch now holds the appointment of Professor of the Institute of Hygiene in Berlin.

A criticism appears in the *Fortnightly Review* for December, written by Dr. Berdoe, a partisan of the Anti-Vivisection Society. Dr. Berdoe first briefly sketches what he regards as the numerous and contradictory deductions which the most eminent pathologists have drawn from experiments on animals. Koch's theory is based on that that the specific morbific agent of tubercle is a bacillus. Heneage Gibbs, however, has declared that the bacillus cannot be found in the early stages of tuberculosis. Lormis has found the bacillus in healthy bronchial glands. Villemin, Simon, Andrew Clark, and others have asserted that the specific poison of tubercle can be communicated from one animal to another. Burdon-Sanderson, Wilson-Fox, Cohnheim, and other investigators have satisfied themselves, on the other hand, that by inserting setons of cotton-thread, cork, paper, gutta-percha, in the body, they have produced tubercular disease in animals. Dr. Berdoe gives further records of opposing opinions from the vivisectionists. Then he briefly condemns the Pasteurian prophylactic against hydrophobia, quoting the Pasteur and Koch " crazes " as evidence of the proneness of the world " to take its benefactors by force and make them by turns its kings." He exonerates Koch himself from the charge of hurrying forward his cure, but points out that he had made his first injection to a human being only eighty days ago, that he had himself stated that the effects were very different on men to what they are on guinea-pigs, that even if the lymph will do all that is claimed for it, it is far too early yet to assume that the effect will be permanent, that the dead tissue which it is said to produce may itself be a new source of danger, and that very probably terrible disappointment awaits sufferers who have placed too much faith in the promises of the irresponsible portion of the press. With regard to the reasons given for keeping the composition of the remedy secret, he asks, "Is it possible that a man of science so eminent as Dr. Koch is using, and permitting a great number of other physicians to use, a remedy the manufacture of which is either not perfected or not explainable to other bacteriologists ? " Then he tells the story of Koch's alleged discovery of the "comma bacillus," which was announced half-a-dozen years ago as the cause of cholera. Koch's discovery of this was seriously discredited by many other eminent bacteriologists. Dr. Berdoe at least proves that it is as yet too early to sound pæans of victory over the terrible disease.

CHLOROFORM FOR TOOTHACHE.—FATAL RESULT.—The deputy-coroner of Dublin held an inquest on Monday at the Morgue, on the remains of a girl named Mary Canning, who was found dead in her bed on Saturday night at 12, Merrion Square. The girl had been a lady's maid to Mrs. Jackson, and was suffering from toothache. She procured a bottle of chloroform and saturated a piece of wadding with it, which she applied to her cheek, and died from the effects of the narcotic. Dr. Boyd, who was called in immediately on the girl being discovered, gave it as his opinion that she had been dead for an hour and a half. The jury returned a verdict of accidental death from the incautious use of chloroform.

PATE DENTIFRICE.—Precipitated chalk, 150 parts; powdered white soap, 150 parts; powdered orris root, 50 parts; carmine, 2 parts, oil of peppermint, 15 parts; oil of cinnamon, 25 parts; glycerine, a sufficiency.

Dissolve the carmine in a little solution of ammonia, and mix it well with the chalk and orris root, then add the soap and the essential oils, mixing the whole thoroughly in a mortar, and sifting to ensure thorough division of the oils and the colouring matter. When this is done return the powder to the mortar, and make into a hardish mass with glycerine. The mass is now to be formed into cakes, and may be put up in tiny porcelain jars.

AN alternative flavouring compound is, says the *Chemist and Druggist*, composed of oil of peppermint, 10 parts; oil of lemon, 10 parts; and oil of cinnamon, 5 parts. The "Pâte" may be rendered "antiseptic" by the addition of 1 per cent. of oil of thyme, dissolved in a sufficiency of rectified spirit. Salicylic acid should not be used, as it combines with the chalk, and so loses much of its value. After the cakes have been moulded, they may be hardened by exposing to gentle warmth, and a polish given to the surface by light rubbing with a soft cotton cloth.

PAIN IN TEETH AFTER FILLING.—A contemporary which ministers to the dental necessities of our friends the chemist-dentists, gives a long answer to a correspondent who complains that his patients suffer pain after filling. We can give the gentleman a much shorter one, *i.e.* "Learn to fill properly."

LOCAL ANÆSTHESIA.—A spray, composed of ten parts of chloroform, fifteen parts of sulphuric ether and one part of menthol, is said to be very effective as a local anæsthetic.

Journalistic Memorabilia.

GASOLINE BLOW-PIPE.

Mr. J. J. REED, writing in the *International Dental Journal*, says :—The blow-pipe consists of a quart bottle with a mouth about one inch in diameter, fitted with a rubber-stopper, the latter perforated by two holes, through which pass two glass tubes, one extending nearly to the bottom of the bottle, the other merely passing through the stopper. Two rubber tubes, about four feet long, are attached to the glass tubes. To the end of one of these is inserted two inches of glass tubing to serve as a mouth-piece, and to the other the ordinary mouth blow-pipe. The bottle is half filled with gasoline. By blowing through the mouth-piece tube, which should be attached to the tube extending to the bottom of the bottle, the air is made to combine with the volatile properties of the gasoline and passes out through the blow-pipe tube and may be ignited by an ordinary alcohol lamp. It produces an intense heat. If it is desired to increase the size of the flame, all that is necessary is to use blow-pipes of varying apertures from one-eighth inch down. Care should be used not to blow in the wrong tube, as this would force the gasoline out of the other tube. A foot blower will be found of advantage.

THE HERBST METHOD OF FILLING WITH GLASS.

Mr. JAMES A. BRUCE, D.D.S., of Melbourne, Australia, writes in the *International Dental Journal* :—There must be three or four kinds, or rather colors, of glass—viz., white, brown, and yellow, with occasionally a little blue—so as to adapt the filling to the color of the tooth. The best results obtained by Dr. Herbst are produced by using beads, careful to obtain those having very little or no transparency, such as milk-glass. These are ground very fine and mixed according to the color of your tooth. I find the best way is to have a good average color, and for any alteration necessary a small quantity of white, yellow, or brown, as the case may need.

Prepare the cavity in the mouth without any undercuts; but leaving it with nice, sharp edges, the latter being an important part in the success of the filling. Next, line the cavity with one layer of No. 60 gold foil, pressing it to place with india-rubber or some such material, and finally taking a wax impression (the wax being used hard), the gold being withdrawn in the wax. The result is a sharp impression of the cavity into which plaster and pumice, in proportion of two to one, respectively, is run. After this is thoroughly set, boil out the wax, leaving your model with the gold coating. Proceed with the glass filling by placing a few grains of sand in the bottom of the cavity (to make the cement adhere firmly) and a little glass mixture, moistened on the top, very little more than enough to hold the sand together. Dry thoroughly, and then make use of a Bunsen burner and mouth blow-pipe, the former being necessary to get rid of the smoke. Heat until a blaze is formed, then allow it to cool off, and then add your second coating, which very nearly fills the cavity, and proceed as before. The third coating is to bring up the glass exactly to the edge of the cavity. It is done in the same way as the others and forms the last layer, This process very much resembles continuous-gum work; but the excessive heat is not needed. When cool, remove the filling from the plaster and gold and it is ready for insertion in the mouth. Before inserting, however, make slight undercuts in the cavity without altering the outer edge. The gold used gives a very much sharper edge to the glass filling, and altogether seems to fit the cavity better than when doing without it. The filling is made in a very few moments and can be prepared by an assistant, and in places, such as the labial surfaces, can with practice be made a very good match to the color of the natural tooth and a perfect fit. Perhaps I might add that it is always well to have the filling slightly darker than lighter than the tooth. These fillings when once inserted into cavities with cement are so firm that it is almost impossible to remove them. Dr. Herbst adds to the above the following suggestions: "It is somewhat difficult to procure the right kind of beads. They are such as are used for needle work. There should be one color mixed with three parts of the white and one part of the brown glass ground previously in an agate mortar as fine as possible. First try the color by burning one layer and add a little of the white or brown glass as the filling may require."

THE DENTAL RECORD.

VOL. XI. FEBRUARY 1st, 1891. No. 2.

Original Communications.

VARIOUS DISEASES THAT AFFECT THE TEETH.*

BY W. S. HOLFORD, M.R.C.S., L.R.C.P.LOND., L.D.S.

MR. PRESIDENT AND GENTLEMEN,

If I had thought for one moment what the title of this paper meant, I should not have accepted it so readily as I did, and should have left some abler pen than mine to do justice to a subject so immense and on which only years of investigation and practical experience would justify speaking with authority. I have only selected a few of the more important of the diseases which influence the teeth, as to give them all would be quite impossible in a paper of this length, for almost every disease known to medicine has some more or less remote connection with the teeth.

Congenital syphilis is perhaps the disease of all others which sets its stamp upon the developing teeth by in some way altering their growth and giving a peculiar and quite characteristic appearance, so that in a well-marked case they could not be mistaken for anything else; and, in those cases not well pronounced, a stunted and ill-formed appearance.

To understand how syphilis affects the teeth, it is necessary to bear in mind two facts. One is, that specific inflammations rarely, if ever, occur in intra-uterine life, and that the majority of syphilitic children are born healthy. The other is that the disease does not, as a rule, impair the development of the whole frame (Hutchinson). The malformations of the teeth are the direct effects of inflammation of the gums, periosteum and dental pulps occurring during the first few months of life. At birth, the temporary teeth are already formed and calcified and beyond the reach of any inflammations which may occur, but the permanent set are as yet mere pulps, so that, while the first set show no peculiarities as a rule, the second set are liable to peculiarities of form and defects in structure, which considerably augment their chances of decay.

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* A Paper read before the Dental Students' Society, London Dental Hospital.

There is one effect of syphilis on the temporary teeth that deserves mention, viz., their irregular eruption. Mr. Coleman made observations on eleven cases and found that two had the central incisors at birth, one when a few weeks old, two two months after birth, two about the usual time, and the remainder very late. It used formerly to be the practice in all cases, except where children were brought up by hand, to remove these teeth ; but, owing to the invention of nipple shields, it is now seldom necessary. Sometimes, at birth, small sharp spikes loosely attached to the gum are found. These are the calcified dentine caps of necrosed temporary teeth, and should be at once removed.

The permanent set are generally small in size, with spaces between them, and are rounder in form than normal, being what is generally known as peg-shaped, and being of a dirty translucent colour, a colour which is very hard to describe, but which has been called the colour of " size," and, once seen, is not readily forgotten. The upper central incisors are the teeth principally affected, and Mr. Jonathan Hutchinson goes so far as to say, with these well-marked, he would put the patient down as having congenital syphilis, without any other confirmatory symptoms. They are dwarfed teeth, placed widely apart and leaning towards each other, wider at their bases than the tips, and present at their cutting edge a single broad notch which extends the whole width of the tooth, and having, in a newly-erupted specimen, several sharp spines, which soon disappear, owing to mastication. The lower incisors are smaller than normal, are placed widely apart, with sharp serrated, but not notched, edges, and are often devoid of enamel at their tips.

The canines are stunted and decidedly peg-shaped, and usually have a ring round the tooth a little below the tip, due most probably to some arrest of development.

The six-year molars are smaller, rounded, and more dome-shaped than normal. The cusps, which are calcified at or just after birth, escape, but round and just below them is a band of imperfectly formed enamel, which, from its deficiency of quantity, makes the cusps look much sharper than they really are.

The rest of the teeth are normal in appearance, with the exception of the enamel, which may be rather deficient in quality.

Syphilitic teeth are remarkable for their softness, which is due to the insufficient quantity and defective quality of the enamel. They wear down very quickly and, after thirty, it is rare to find the typical notched teeth, the whole cutting edge having been worn flat.

The administration to children of mercury produces a decided effect on the teeth, which somewhat resembles that caused by syphilis. Why it should have this effect it is somewhat difficult to understand, as it is a well-known fact that mercury given to children rarely affects the mouth. It is, however, possible that it may produce congestion and tumefaction in many cases in which no obvious ptyalism occurs.

The teeth, as a rule, are thin, especially at their edges, of bad, yellow colour, and often the lower ones are thickly coated with tartar ; they shew the normal relations with unusual distinctness and there may be a thinning of the cutting edge in a slightly crescentic form, in which case the distinction between mercurial and syphilitic teeth becomes extremely difficult. The enamel is deficient in quantity and quality, aud is pitted on the surface, forming what is known as honey-combed teeth, this condition being rare in the subjects of inherited syphilis.

Acquired syphilis, unless indeed it is acquired directly after birth, has no effect on the development of the teeth and does not change their form, but it is very liable by causing necrosis to result in the exfoliation of portions of bone and with them the teeth.

This necrosis may commence in two ways, either as a node on the surface of the hard palate or floor of the nose, which suppurates and separates the periosteum from the bone, so cutting off the blood supply ; or it may commence as acute periostitis, going on to necrosis.

STOMATITIS.

The various forms of stomatitis are the gangrenous, ulcerative, follicular and the aphthous stomatitis of young children. which is usually known under the name of thrush.

These various forms affect the teeth in a marked degree when they occur early in life, but as far as my experience goes, and that is very limited, you cannot say, "That tooth is the result of stomatitis," in the same way that you can of a syphilitic tooth. In the stomatitis of young children, usually of the follicular or the ulcerative forms, the inflammation does not, as a rule, extend deeply, except perhaps in some bad cases of the ulcerative variety, so that, considering the number of cases of stomatitis, necrosis of the bone and subsequent exfoliation of developing tooth germs are rare. The effect of stomatitis on the growing tooth is to impair either the quantity or quality of the enamel. The usual varieties of stomatitic teeth are the honey-combed or pitted and the thin-edged. The former are studded over with little circular pits in the enamel which may even reach right down to the dentine, and are often arranged in straight lines across the tooth and are usually fairly symmetrical, though sometimes a tooth may be attacked and its fellow on the opposite side escape. Some cases present two bands of malformed enamel with a band of normal tissue between, shewing that the patient has suffered from successive attacks with an interval of health between. The second variety, the thin-edged teeth, have at the tips and extending a variable degree up the tooth, are quite destitute of enamel and present a peculiar " crinkley " appearance. These teeth usually decay early, and are extremely bad cases for filling, as, when you once begin to cutaway the carious part, you hardly know when to stop. I have seen several cases in which a small hole goes right through the tooth. The best plan for treating these teeth, if they are carious, is to grind away the tip, providing it can be done without injuring the pulp, and then face the exposed surface with gold. But whatever is done the result is very unsightly.

THE ERUPTIVE FEVERS.

The eruptive fevers influence the teeth in two ways, by altering their development, and by causing necrosis. Teeth whose development has been arrested and stunted by any of the fevers occurring during early life are indistinguishable from stomatitic teeth; therefore I shall not further take up your time by describing them again, but at once proceed with exanthematous necrosis.

Necrosis occurring after any of the fevers, particularly scarlet fever, measles or small-pox, whichever the disease that produces it, the simple inspection of the patient during the process of exfoliation would give no clue as to its origin. Scarlet fever causes the greater number of cases, measles occupies the intermediate position, with small-pox last. It is a remarkable fact that these cases are nearly always symmetrical : though they may not start immediately together, one side follows soon after the other.

The history of these cases is usually very similar. A young patient usually between the ages of three and eight years, is brought to you with the history that quite accidentally it was noticed that there was a nasty discharge in the child's mouth with very fœtid breath ; there may or may not be any tenderness. These are usually the only symptoms complained of, but on examination you find that the gum is receding from the necks of the teeth, exposing necrosed alveolus and secreting a very fœtid discharge. The sequestrum may or may not be loose, according to the duration of the case. Usually the sequestrum consists only of the alveolus containing the temporary teeth together with the crypts containing their successors, but Mr. Salter, in the Guy's Hospital Report, mentions the case of a girl aged four who, after an attack of scarlatina six weeks previously, had nearly the whole of her superior maxilla necrosed on one side and a small portion only on the other.

On enquiring about the case you nearly always get a history of an attack of either scarlet fever, measles or small-pox contracted a short time previously.

The treatment of these cases is usually simple. Support the patient's strength by good food, tonics, and plenty of fresh air, give a deodorising mouth wash, and wait till the sequestrum is loose before removing it.

Scurvy.

Scurvy is now, fortunately, a rare disease. The tissues of the mouth first are involved, and through them the teeth. It occurs through an injudicious selection of diet, when too much meat and too few vegetables are eaten. Briefly, the symptoms are a rapidly progressive anæmia, pains of a rheumatic character in the back and limbs, with mental apathy and depression, petechial hæmorrhages occur, followed by large subcutaneous extravasations. With these conditions the gums appear deeply congested, tumid, and thickened ; they bleed easily, and often ulcerate and slough, imparting a horribly fœtid odour to the breath. The alveoli become absorbed, and the teeth loosen and drop out. The only remedies which have any effect, and which will, provided the disease has not advanced too far, act in the most marvellous manner, are fresh vegetables, especially lemons, combined with lime-juice and citrate of potash.

GOUT.

Gouty subjects are not particularly nice dental patients, not, I mean, in the sense that they are bad-tempered, but very little seems to make their mouth go wrong. You may stop a small hole in a tooth which causes no pain and which is not near the nerve, and yet without any reason you may get an attack of periostitis. Again, gouty patients are liable to a rather intractable periostitis, which may come on without any discoverable cause ; it is very painful, though the outward signs are not very marked. The most important thing to do is to treat the patient's gout, and the periostitis will get well of itself, always provided it owes its origin to none of the usual dental causes. Another very curious effect of gout is that you get a peculiar form of attrition in the molars. A patient comes to you, and whilst examining his mouth you notice that his molars have a perfectly flat surface with good square smooth edges, and in a large majority of these cases, if you ask them if they are gouty, they will say yes. Why this should be I don't know. It may be that the teeth are rendered softer than normal by the disease, but how it could I don't understand.

To briefly recapitulate, teeth whose structure has been impaired during their development may be divided into two classes, according to their cause : 1st, the teeth of congenital syphilis, which are usually unmistakable ; 2nd, teeth whose defective structure owes its origin to either stomatitis or any of the eruptive fevers. In this class it is quite impossible to tell which disease has been the cause without inquiring into the history of the case, and even then it is not always possible to make up one's mind.

In conclusion, gentlemen, I beg to thank you for the patient hearing of what, I fear, has been a very superficial paper, and can only hope that you will make up for its deficiencies by a good discussion.

OUR PARIS LETTER.

By M. Ch. Godon.

Translated by H. Baldwin, M.R.C.S., L.D.S.

On reading the address, delivered at Exeter at the opening of the Annual Meeting of the British Dental Association, upon the present situation of the dental profession in your country and the different schemes proposed, it seemed to me that it would be interesting to our English *confrères*, to show them the actual legal situation of the dental profession, and the schemes of reform which are afloat in our country. It will be seen how analogous, on certain points, our situation is with what is or has been in Great Britain.

The office, at the Chamber of Deputies, of bills concerning the practice of medicine, has again called attention to the conditions under which dentistry is practised. For the space of a century the practice of dentistry has been entirely free in France. The last regulation which concerns it, viz , the royal edict of 1768, which compelled those who wished to *devote themselves to the care of the teeth*, to obtain upon examination the title of *dental expert*, was suppressed by the law of 1790 abolishing masterships. The law of the 19th *Ventose* of the year XI. (1803), which regulated afresh the practice of medicine, did not contain any article relative to dentistry, so could not be applied to it. Several attempts were made to assimilate the dentist to the doctor, but the law, variable at first, was finally settled on this subject in the negative sense, by the Court of Cassation (Appeal), in two frequently cited law suits, those of 1827 and 1846.

This situation gave rise to many disputes. Petitions were presented to the authorities to obtain their intervention. During this time dental art was developing abroad, above all, in the United States, by creating dental schools and societies, dentists gave great impetus to the profession, to which they owe the favour they have for some years enjoyed in France.

The French dentists, who had enjoyed a certain amount of reputation at the beginning of the century, not wishing to see themselves outstripped, also set to work and founded schools in the absence of all government intervention : the Dental School of Paris (1880), and the Dental School of France (1884). Thanks to those schools and the societies which form their complement, dentistry has made considerable progress in France this last ten years.

The body of men composing the profession has been quite changed. Out of 2,000 to 2,500 dentists practising in France, it contained about 50 graduates in medicine, doctors or *officiers de santé*, and nearly as many graduates of foreign dental schools ; the remainder was composed chiefly of practitioners, educated exclusively by apprenticeship, and whose ability and technical instruction presented enormous differences, arising first and foremost from the conditions under which they served this apprenticeship.

In order to be complete it is necessary to mention a last category, comprising all those who preluded to the practice of dentistry that of some other profession, and of which that of the barber seems to be the loftiest. To these different lists another must be added, which tends to rise more and more in importance. This is that of the graduates (*diplomês*) of the two French dental schools, actually numbering more than two hundred, *i.e.*, about one-tenth of the whole professional body. These possess an aggregate of knowledge and professional ability markedly superior to that of their predecessors

The dentists, then, seem to have completely resolved the problems relative to professional training upon their own initiative. There remain the regulation and better legal organization of the profession. That is a complex question and one upon which opinions differ. Some make out that the dentist, taking the care of the mouth and its dependencies, giving prescriptions, using remedies reputed to be dangerous and inducing general anæsthesia, does the work of a doctor ; that, therefore, he ought to be subject to the same requirements and be able to show the same guarantees of study and of qualification as other specialists, &c., but that in order to complete his training there would have to be a course of odontology created in each faculty or school of medicine. To this the objection is made that the long duration of medical studies does not now permit the time to be spent on the special studies of dentistry which they require, and for which a course of odontology is considered insufficient. It is said also that the *rôle* of the dentist has been exaggerated, that he undertakes the care of the teeth, but not of the mouth, and still less of its dependencies. That he employs drugs in doses too feeble to be dangerous, and that he does not practice general anæsthesia. Of the two countries which have adopted this solution, one (Holland) gave it up after a trial of ten years (1867-1877), and in the other (Austria) illegal practice has become general. Moreover, midwives, who still practise medicine, are tolerated with less guarantee. The advocates of the separate management of dentistry with a special diploma, as was under old French law and as is now in the majority of foreign countries, are numerous. They point out the peculiar nature of the art of dentistry : if it has many points of contact with medicine, on the other hand it borrows most of its operations from the arts of the jeweller, the sculptor, the modeller, the worker in pottery, &c., and that it is impossible to arrange the teaching of such a profession in a school of medicine, as it can only be adequate, from a technical point of view, in a special dental school either free or belonging to the State. Some advocates of specializaton would like the diploma to issue from the faculty, as is the case in England and Germany, and as in France for architects or engineers, because of the practical impossibility of prosecuting for the illegal practice of dentistry, for the offence of extracting or dressing a tooth. The advocates for the maintenance of the *status quo* do not see the necessity for intervention of the State in a matter which has been going on for a century without any drawbacks. Have there been, they say, any complaints on the part of the public, any accidents? There is nothing to show it. This intervention would give the State new responsibilities (creation of schools, committees, &c.), it would give to a certain class of citizens benefits which each succeeding government during the last hundred years has declined to do, and which would mean for the public a raising of fees. From a legal point of view it would very often create a new offence (illegal practice of dentistry) because of the altered state of things for the artizan dental mechanic, and the suppression of which would be impossible.

Lastly, say they, this intervention would be inopportune, since the dentists have organised teaching ten years ago on their own initiative and by their own resources, and have gone to work themselves to reform their profession.

Thus several solutions are on the tapis :—

1st. Complete assimilation of dentistry with medicine, and absolute necessity of the dentist possessing the diploma of doctor of medicine.

2nd. The surgeon's diploma *(officiat de santé)* suppressed for the doctor and obligatory for the dentist !

3rd. Creation of a special dental diploma of dentist or dental surgeon, which shall be obligatory, after study in the schools of dentistry.

4th. The same special diploma and under the same conditions, but given by the faculty.

5th. Postponement of all intervention or maintenance of the *status quo*.

All these plans have their numerous and ardent supporters.

The public authorities and different bodies concerned are as divided among themselves as are those immediately interested.

In 1880, after several petitions, one of which emanated from the *Chambre Syndicale de l'Art Dentaire* (of recent foundation), the Minister of Public Instruction, through the intermediary of M. Gréard (vice-rector of the Academy of Paris). asked the advice of the faculty of medicine on the question of the utility of regulating dental practice. The rector of the Academy of Paris proposed to give dentists the diploma of *officiat de santé* after one examination.

The faculty, on the report of Prof. Lefort, proposed the creation of a special diploma of dentist, after study in a dental school (1882). The Committee of Public Health of France, being agitated by the question, through the agency of M. Gallard, decided for assimilation with general medicine and the necessity of having the diploma of doctor of medicine, or *officiat de santé* (1884). This scheme was adopted by the Minister of Commerce, M. Lockroy, in 1885.

At the Chamber of Deputies, Dr. Chevandier, in his different schemes on the practice of medicine, inserted a clause with regard to dentistry, for which he required simply a special diploma of dentist.

Whilst one of the two professional societies gave its support to the different schemes for regulation, the other, the *Association Générale des Dentistes de France*, protested, and spoke up for the maintenance of the *status quo*. To this last solution the Commission of the Chamber agreed in 1887, the chairman proposing the adjournment of all legislation on the subject of dentistry. Since the meeting of the new Chamber, the question has been again raised in connection with the new schemes on the practice of medicine.

In all these new schemes, dentistry is considered, and all the old plans are to be found therein, as in the preceding.

Whilst the members of the *Société de Stomatologie* recommend the necessary acquirement of the doctorate, or, like M. Galippe, simply the *officiat de santé*, and others, as in the Government schemes, those of Dr. Chevandier, of Dr. David (formerly director of the *École Dentaire de Paris*, and Deputy since 1889), &c., recommend special studies and the diploma of dentist.

The two professional dental societies have for once agreed upon a unique scheme, which was adopted in full assembly, June 3rd, 1890. This scheme first of all expresses a desire for the maintenance of the *status quo*, and, secondly, indicates the conditions under which any project of regulation would be acceptable. (See "Laws on the Exercise of Medicine," before the Chamber of Deputies. Report presented by M. P. Dubois in the name of the Commission of the *Association Générale des Dentistes de France*, 1890.)

In the face of these differences of opinion, what will be the decision of the Chamber? Says one, "This question of the dentists retards the adoption of schemes for reforming medicine. Will they, like the preceding Commission, decide for the shelving of the subject? In this case, it seems well for us to settle the indeterminate position of dentists."

To that effect, could not we, acting together with the Faculty of Medicine and the professional societies, fix the limits of the dentist's field of action?

The Government could then lend its support to the institutions already founded by the dentists themselves, and that would be the simplest of solutions.

DENTAL EDUCATION & LEGISLATION IN AMERICA.

THE *Dental Review* for August publishes in full the proceedings of the American Dental Association, and from them we glean that the subjects of Dental Legislation and Education are engrossing the thoughts of some of the leading spirits in America. The President, Dr. M. W. Foster, of Baltimore, in his annual address, says:—"I would suggest that this body take into consideration the advisability of a uniform set of laws regulating the practice of dentistry in all the States. From a hasty examination and rough analysis of our State statutes, we find that our laws regulating the practice of dentistry in the different States are by no means uniform in their requirements. This is not as it ought to be, and if continued will bring on a conflict between the associations of the several States, which will weaken, if not entirely destroy our national existence as a dental profession.

1. We have laws which demand that both graduates and non-graduates shall be examined by State Boards before admission to practice.

2. We have laws recognising the diplomas of reputable schools. These permit the holder to practice to the exclusion of all others desiring this privilege.

3. We have laws demanding examinations, but allowing this favor to graduates only.

4. We have laws demanding examinations of dentists, whether graduates or not, with exceptional clauses in favor of the medical degree.

"In regard to the first mentioned, that is, laws which examine all alike, whether graduate or not, it would seem at first glance more or less without serious objection. It seems fair to judge an applicant for the privilege of practice by what he knows. But is it fair to place a man who has had no college training on the same platform with one who has enjoyed, at much expense of time and money, this advantage? No medical board that I know of permits this, and if these laws were universally adopted, would it not seriously affect the interests of our colleges, and what would those members of our profession, who have so earnestly advocated the extension of college preparation and training have to say to this, particularly when the colleges, in obedience to their demand and suggestions, have already lengthened their time of preparation from one to three sessions?

"Let us look for a moment practically at the working of such a law. I know that in one of our States, a would-be student of dentistry was advised, as his means were limited, that it would be much better for him to prepare himself at home and go before the Board of Examiners, and thereby save himself much in time and money; that at last if he should go to college and graduate, he would be subjected to the same ordeal. This looks to me like progressing backwards.

"In another State the laws of the State Dental Association require that members shall take as pupils to prepare them for college, only those who will remain under their preceptorship two years. This added to the three years required by the colleges, would aggregate five years of preparation prior to admission to practice. Under such circumstances do you not believe that the average man would decide to prepare himself at home and let the colleges go? These State laws make no discrimination in regard to previous preparation. If the applicant is twenty-one years of age and can pass his examination, he is permitted to practice.

"*Again*, does not this forced examination of our college graduates show to the whole world an implied distrust and want of confidence in our own schools? Even foreign countries recognise some of our college degrees. Under the laws above quoted none are recognized. Is this not a national degradation? And is it not calculated in every way to injure and destroy our own institutions?

"2nd. We have laws which recognise the diploma of all reputable schools, and allow only such the privilege of practice: these rid of all examinations. It seems to us that laws like these evidently take the ground that a college training is imperatively necessary to a practitioner, and forbid all other consideration. They do not suppose it even possible that a practitioner can be qualified for practice in the office of a preceptor.

"3rd. Laws which demand examinations of all graduates, but exclude all others from this privilege. These laws, like the last quoted, concede too that the graduate alone is competent and fit to practice. In this way they aid and encourage the colleges, but they throw a wet blanket on them by publishing to the world that we have not a single college in the United States like Cæsar's wife, above suspicion; no dental diploma which can be trusted and relied on; thereby destroying the reputation, the prestige and the value of every dental degree in our country.

"It does seem proper that the student who has spent so much time and money in procuring his degree should have some protection and exemption from the torture of further examinations. Under these laws there is no respite or relief for him; no matter where he settles, this ordeal awaits him. If he passes his examination in one State, and for reason emigrates to another, the same ordeal of torture is inflicted.

"Suppose the State Boards in each respective State where a dental college or colleges exist be required with their faculties to conjointly examine thoroughly, both practically and theoretically, all candidates for graduation, and when a student has been subjected to such examination and found worthy and deserving, let the diploma be signed by the president or secretary of the board, together with the faculty, and then let such diploma be accepted in every State of the country. Would there be any reason for one State Board rejecting the work of another? The public and our profession, through its selection of the members of such boards, ought to be satisfied. The colleges would, I think, rejoice in thus being relieved of the responsibility and unpleasant duty of turning down incompetent men, the students would be fairly and thoroughly examined, and I believe would be satisfied. They do not so much dislike examinations, as they do the repetition of them. Dr. Riggs used to say dentists were like bumble-bees—always biggest when first hatched—and they feel a sense of mortification to be obliged after graduation to submit to an appearance before a State Board of Examiners."

Then the Report of the Section on Dental Education, brought forward by Dr. C. N. Peirce, of Philadelphia, after stating that the number of graduates for the past year had been 963, says :—" The rapid multiplication of dental schools in the United States involves a question which is menacing the future prosperity of the dental profession. The results in all probability will be similar to the results attained by the medical schools of this country, who turn out annually, to prey on an unsuspecting public, a number of men which largely exceeds the number of graduates in Great Britain, France, Germany, Italy and Austria combined. This has been carried to such an extent that the medical graduate is the laughing-stock of his trans-atlantic confrère. He now swarms in such numbers in the United States that one out of every six hundred is a medical graduate. At the present rate of progress made by the dental schools of the United States, they will soon equal, in fertility at least, the medical colleges of this country.

" While eventually the subject of education will probably be under national control, at the present time some means ought to be adopted whereby the rapid increase of so-called colleges might be checked. Possibly the only remedy at present lies in the amendment of State constitutions, so that at least none but 'reputable and capable' men may be able to secure articles of incorporation. In one State the incorporation of dental colleges and infirmaries is almost co-equal with the issuance of dog licenses."

Further on the same Report says :—" In view of the fact that a very large proportion of our dental schools are dependent upon the class in attendance for support, and that the compensation to professors and demonstrators has a like sustenance, the temptation is constantly to increase the class beyond capacity for instruction, and to estimate its value by numbers rather than quality. To such an extent has this been true in the desire to excel by publishing a large graduating class, that a prominent school some two or three years since graduated the same five students two successive years. To express the condition of our educational institutions tersely and in a few words—we should say, that under the present organization of a very large majority of our schools, the tendency or temptation is to insufficiency rather than proficiency, to superficiality rather than solidity."

Besides papers by others on the subject of Dental Education, Dr. Ottolengui, of New York, contributed one, every word of which would well repay perusal. We cull the following extracts :—

"I have conceived an idea by which I hope to see the school system in our profession improved, till the man who holds a degree which permits him to experiment on humanity, shall be a man whom humanity may trust. This cannot be whilst diplomas may be granted by any ten men who have influence enough, or money enough, to obtain a charter from a corrupt or corruptible legislature. This cannot be whilst the men who grant degrees are winning dollars in proportion to the number of men passed. This cannot be whilst the colleges set their own standards, even though they honestly live up to them. Such standards are necessarily influenced by environment ; therefore the graduate of one college is the superior of those from another school, apart from individual excellence. The time must come when a dentist will be a dentist. In that day the dentist in California will be the same as the practitioner on the Atlantic coast or on the Mississippi. In that day the dentist will not be a specialist in medicine, because he will know all that his medical brother has learned and something more. He will be an oral surgeon in all that the words can be made to imply."

Not the least valuable part of the paper is that in which he states the opinions of others to whom he had written. Thus Dr. G. V. Black writes :—

"Perhaps the matter of Dental Education will never be entirely satisfactory to those of us who make an earnest effort to push it forward. Certainly it will not while the qualifications of the pupils, both for entrance and exit, are controlled by that circular God with the eagle stamped on the reverse side. I have become satisfied that it would be best for all concerned, if the final examinations were controlled by a board free from that kind of influence."

Dr. C. N. Peirce writes :—

"I fully sympathize with your idea that we shall never have a satisfactory standard of efficiency until we have a national—a single body—upon whom shall devolve the responsibility and power of conferring the degree which shall represent that standard. Your Dental University nicely covers the idea. *The school, or rather the faculties that teach, must be deprived of the power of granting degrees.* To reach the ideal it must be done by an impartial body who knows the applicant only through his qualifications, and without reference to where he has been educated."

Dr. Hugenschmidt, of Paris, writes :—

"I am very glad to see that an American citizen, and a member of our profession, should have indicated that it is time to call a halt to the manufacture of D.D.S.'s by the cart load, as is done by certain colleges in the United States, without sufficient consideration of the baggage of scientific knowledge possessed by those who are armed with this degree. The American diplomas of D.D.S. had attached to them a well-deserved reputation throughout Europe, until within the past few years, when it was observed that those who went to the United States, for the purpose of acquiring an American degree, could return to their respective countries after attending a course of a few months at one of your second-class colleges, bringing back with them an amount of knowledge much inferior to what had always been expected from one who possessed an American dental degree."

Dr. Ottolengui then goes on to say :—

"The salient objections to the present system are these :

"(*a*) Each school erects a standard of its own, intentionally, or unintentionally, influenced by self-interest. The school depending for income and profit upon the number of matriculants, is apt to admit men easily. The attraction to a large number of men, being the chances of easy graduation, it is to the advantage of the school to graduate as many as possible.

"(*b*) The professors in many schools, instead of receiving fixed remuneration for their services, are directly interested in the conduct (commercially) of the institution, owning stock and drawing a share of the profits. Thus they are benefited by the results of objection (*a*).

"(*c*) In many schools the junior and senior classes receive instruction together, listening to the same lectures. This saves the professors from preparing and delivering two sets of lectures, one primary and the other advanced. The result is that much of the first year is wasted, because technical terms are used which can only be intelligible to the advanced student.

"(*d*) In many of the colleges the students are under the guidance of only one or two preceptors in each department. The result is that with large classes, only the insistant student can demand, and obtain, proper instruction from the preceptor. A student with this quality of insistance is probably a man who will eventually learn without instruction, but by demanding what is his just right, due attention from the teacher, the duller student receives even less attention.

"If we could deprive the schools of the right to grant diplomas most of these objections would cease to exist. The school becoming merely educational in its purport, with a standard, erected by an independent body, which must be reached by its students before diplomas are granted, that very self-interest, at present operating insidiously against high education, would be the most potent factor towards increasing the facilities for acquiring knowledge."

Without following the essayist into the intricacies of the scheme by which he proposes to remedy the present state of affairs, we have extracted enough to show that a strong feeling is arising in America, that the present system of examination is unsatisfactory, and unworthy of the profession and the country. This has long been felt on this side of the Atlantic. That those who teach and have an interest in the welfare of their own school, should also have the right to examine and grant diplomas to their own students, is an anomaly which has enormously detracted from the merit of the American diploma in the eyes of the dental profession in England. The arguments against such a system are very well and ably put forward in the extracts which we have quoted above. They are briefly (1), the liability to unfair and easy examinations, in order to increase the graduating list, and (2) the varying standards of the different colleges.

Now in England, when the examination for a dental diploma was first instituted, we had our Examining Board ready to our hand, for the Royal College of Surgeons, who have almost from time immemorial been one of the chief examining bodies for medical students, undertook to conduct the Dental Examinations in the same way and on the same principles. Here, then, we have an Examining

Board quite distinct from any of the teaching colleges; the examiners are quite ignorant and indifferent as to what colleges the would-be graduates hail from, and their only care is to maintain a high and uniform standard of knowledge. We are pleased to note that the scheme apparently most in favour among the reformers in America is one based on the same lines as our English Examining Board; we heartily wish them well in their endeavours, and hope they will soon be able to take steps to remove the discredit at present attaching to the American D.D.S. diploma.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Annual General and Ordinary Monthly Meeting of the above Society was held on the 12th January. The President, Mr. Felix Weiss, L.D.S.Eng., in the chair. There was a good attendance of Members.

The minutes of the previous Meeting were read and confirmed. Mr. Thos. Maudsley Howkins, L.D.S., of Hull, was proposed as a non-resident member. Mr. J. H. Badcock, M.R.C.S., L.D.S.Eng., was balloted for and elected.

The Treasurer's Report was read and adopted.

The Librarian, Mr. Ashley Gibbings, read his Report.

The Curator, Mr. Storer Bennett, read his Report. He had followed the precedent set by the Curator of the Royal College of Surgeons, and placed all the specimens that had been acquired during the twelve months on the table.

The Officers for the Session, 1891-2, were then balloted for and elected.

On casual communications being called—

Mr. J. Browne Mason (Exeter), showed models, and shortly related a case of unilateral absorption of the superior maxilla resulting from pressure. About ten years previously he made an upper and lower denture for a lady whose upper jaw was entirely edentulous. The patient, however, did not trouble to wear the lower plate, as she thought she did not need it; or if she did, it was an encumbrance she preferred to dispense with. In consequence of the unequal pressure produced, absorption of the superior maxilla on one side resulted. Mr. Browne Mason also mentioned a case of formation of salivary calculi in the sub-lingual gland. An abscess formed on the tongue of the patient and stones came away weighing, respectively, 4, 5, and 5½ grains. These stones were exhibited.

Mr. R. H. Woodhouse asked whether Mr. Browne Mason was correctly understood to say that the calculi were in the gland? or were they in the duct? The former was a rare, the latter a not uncommon occurrence.

Mr. Browne Mason did not see the patient at the time, and was obliged to be content with what he told him. The medical man who attended him spoke of them as coming from the gland. In reply to the Curator, he regretted that he was unable to present the specimens to the museum.

Mr. Cornelius Robbins, being called upon by the President, showed three models taken from the mouths of three members of one family, and remarked that they illustrated some interesting points in the President's Inaugural Address, which referred to abnormalities of size and form in teeth being handed down from one generation to another in the same family; re-appearing in some members and missing others. In this instance there were six children, all girls, three of whom had the very strongly marked cusps shown in the models, while the other three had escaped. The models exhibited were remarkable in that both the carnivorous and insectivorous types were both somewhat imitated. The bicuspids were fully developed, with external cusps greatly drawn out. Some of the molars were covered with cusps, as many as twelve being noticed on one of them. The youngest patient had this abnormality most strongly marked, one of the superior canines being tricuspidated. Mr. Robbins hoped shortly to examine some cousins who are said to have a similar condition. Another interesting case, showing the strange vagaries which may occur in the same family, was that of a young lady aged nineteen, whose left central, lateral, and canine of the permanent series were absent, and the jaw was consequently limited in this region. The temporary canine was standing, and one or two temporary roots, keeping the bicuspids out of position. The almost horizontal position of the bicuspids was, however, not entirely due to the pressure of retained temporary roots. The first superior bicuspid was so placed that at first it was mistaken for the missing canine. The mother attached some importance to the history of a fall which occurred when the child was about three, but in Mr. Robbins' judgment the abnormality was due to inherited tendency, for on examining the sister, Mr. Robbins found the temporary canine taking the place of the permanent one, and the permanent canine occupying the place of the permanent lateral. The model of the mouth of a brother was also shown with absence of bicuspids and the canines abnormally situated. These facts were mentioned to prove the inherited disposition to misplacement. The mother stated that the patient was always inclined to bite things, as a child would do during the first dentition. Mr. Robbins removed the temporary canine, also the horizontal bicuspid and temporary roots, and advised a regulation frame, to bring the other bicuspids into place, before making a denture to fill up the vacancies. The girl, however, would not wear a regulation frame, and it was not until Mr. Robbins had gained her confidence that she would have the carious teeth filled. He treated the case in the usual way, and fitted a small piece to restore the face to its proper condition. Another case was that of a young lady who met with an accident whilst tricycling. She fell, and the upper teeth struck the lower lip, completely breaking the right central and lateral and much lacerating the lip. She did not in the first instance consult a dentist, but went to a medical man for treatment of the lip, which was intensely swollen and very uncomfortable. The doctor said that the ragged edges of the broken teeth were the cause of irritation, and sent her to Mr. Robbins who advised excision and pivoting. On feeling the lip he thought he distinctly felt a portion of a broken tooth in it, and sent the patient back to the medical man, who opened the lip but could discover no trace of anything of the kind. The patient then had to go to Ireland, and Mr. Robbins heard nothing more of the case until she returned, when she told him that three months after he last saw her the piece of tooth, which he believed to be imbedded in the lip, came through externally about ½ in. below where it was supposed to have entered. The circumstances of his next and last case were as follows: the patient, when at the age of three, was in the drawingroom while his mother was on the lawn. She called him to her, and he, being ignorant of the nature of a French casement, tried to run through it and got mixed up with the glass. His face was cut a good deal, and the doctor was called in. The doctor resorted to the ancient if orthodox practice of strapping up, and failed to probe for any pieces of glass, though the boy protested there were some in his face. The method seemed, however, to be so far successful that the wounds healed, and thirty-three years passed away before the subject of the accident in using the tooth-brush felt something hard scraping against it. In the course of twelve hours he riggled out from the inside of his cheek, just anterior to the duct, a piece of glass $\frac{7}{8}$ in. long and $\frac{1}{4}$ in. wide. The process caused no bleeding. Strange to say, there is still a piece in the cheek about the same size. During the whole of the thirty-three years he had no inconvenience or difficulty, except once when as a boy he received from the arm of a companion a slight blow on the cheek which caused it to bleed. The patient, a friend of Mr. Robbins, was present at the meeting, and many of the members afterwards examined the cheek with the glass *in situ*. Mr. Robbins asked the Society to accept the series of models for the museum, as also the piece of glass.

THE PRESIDENT remarked that the last case illustrated very forcibly how long foreign bodies will remain in portions of the system without any seriously harmful effects. He thought the case extremely interesting—quite unique.

MR. C. S. TOMES desired to call attention to one point, viz.: the very great interest which attached to the models in the first case, because they revealed something about the genesis of the various cusps. The bicuspids were on the way to disappearing, being all stunted in point of size, but the stunting was not merely confined to size, they seemed to have got rid of their latest acquired cusp and to have retained their fundamental cusp. If members would look at the model, they would find a cusp closely corresponding to the outer cusp, and internally to that there was a cingulum hardly elevated into a cusp, so that they showed very prettily the relation of canine and bicuspids. He thought it almost regrettable that the molars were not equally interesting. One of the models showed in almost a documentary manner which were the primary cusps of the molars and which were superadded ones.

MR. W. H. WOODRUFF exhibited models from a patient aged about thirty-five, whom he had known for ten years, in which the teeth perfectly articulated on the left side, but on the right side, from the canine region right away to the wisdom tooth there was no occlusion by the space of a full $\frac{1}{8}$ in. There was no history of fracture, no cicatrices, no interference in the way of regulation, nor anything, so far as Mr. Woodruff could gather, to account for this curious abnormality. Either the first or second bicuspid had been taken out. The teeth were very strong, and the arches well formed. The case was interesting, and, in Mr. Woodruff's experience, unique.

Mr. Rilot exhibited a model of an abnormality brought to his notice as a case of geminated permanent incisors. This seemed hardly the name for it, but he was rather at a loss to classify it, and was disposed to say it must be either a case of retained geminated temporary incisors, or a double-crowned lower incisor. If the two teeth were temporary ones, they were unusually long for temporary teeth. Taking therefore whatever view one might of the case, there were certain elements of doubt about it. The neck was very constricted, and Mr. Rilot could not detect any bifurcation of the root. The tooth was very firm and there was no sign of any successor. The patient's age was about thirty. Mr. Rilot also mentioned a case of intense neuralgia relieved by a very slight operation. On seeing the patient it was evident at once that she was suffering intense neuralgia ; every time she opened her mouth to breathe or take food it caused pain which radiated over the whole of that side of the face. From the history it appeared that the trouble came on about six months previously. The usual remedies having been tried without effect, the patient was sent to Mr. Rilot, who, when she was under chloroform made a thorough examination of the mouth—it had been suggested that possibly there might be some buried roots. He found that the sockets of some teeth which had been previously removed had not properly healed up, but there was neither bare bone nor buried roots. The interesting part of the case was that the mere probing of the sockets or the removal of a tiny piece of bone, or the chloroforming, had given absolute relief. Could anyone explain the relation between cause and effect ?

Mr. H. Baldwin, in connection with the case last related, wished to mention one which he had seen some little while ago. The patient, a young healthy man, a long time previously had had an upper molar extracted, and the socket healed up. When he came to Mr. Baldwin he complained of severe pain, which he referred to this point. Mr. Baldwin probed into this depression with a sharp probe until he felt it stick into the bone, and he recommended the patient to allow him to make just an incision across the depression with a lancet, which he did. The patient had written him and said he had had no pain since.

THE PRESIDENT then delivered his

VALEDICTORY ADDRESS.

In assessing the social and scientific condition of a people, no better test could be applied than that furnished by a study of its literature. He did not propose to do more than glance at the literature which had enriched the dental profession. On the threshold they were met by the startling fact that their very existence as a scientific body marked hardly more than 100 years. It was not until the second half of the 18th century that any treatise on the teeth meriting record appeared. John Hunter's "Natural History of the Teeth" was not published until 1771, and his "Diseases of the Teeth" appeared seven years later. Strange to say, the century ended without any essay in extension of these researches. A great change, however, was now manifested, and the medical and dental world seemed suddenly to awake to the importance of the dental branch of medical science. No fewer than fifty works on dental subjects were published before the expiration of the first half of the present century in the English language alone, and in this connection the names of Fox, Bell, Saunders, Tomes, and others, deserved to be gratefully remembered. To do more than acknowledge the steady progress which had characterized subsequent efforts would be invidious, yet he might be allowed to express his opinion that John Tomes' "System of Dental Surgery," first published in 1856, did more to advance the general knowledge of dental art than any treatise previously given, and that its subsequent editions, collaborated with his son, Mr. Chas. S. Tomes, had conferred a lasting benefit on the present generation. Passing to periodical literature, he might perhaps be allowed to refer with pardonable pride to the forty years' journalistic work he had had more or less to do with. It was well known to many that he advocated anonymous authorship, and he still held that reforms of most kinds would never have been effected if the names of the proposers had always appeared. In dental matters the angry discussions of the past period only made the sunshine of the present advancement the more brilliant, and he could hardly point to a single year when advancement was not effected by those who—perhaps unsuspected—anonymously laboured for the general good. As a scientific body, the transactions of the Society would ever hold a conspicuous place in dental literature, and he ventured to believe that its record from 1857 to the present year would contrast favourably with the records of other medical societies. He thought that the ever increasing advantages of hospital practice, and the continually improving modes of procedure, would make the transactions of the Odontological Society even more worthy of acceptance in the future than they had been in the past. In conclusion, Mr. Weiss said: "For myself I have but thanks to offer to all those who have so faithfully supported me. Officers and members alike have tried to make these last days of my professional life happy ones, and although my words are but few, believe me they are heartfelt and sincere."

Mr. Charters White moved the vote of thanks to the President, expressing in happy terms the universal regard in which he, the President, was held.

Mr. Felix Weiss felicitously responded.

Mr. Morton Smale moved, and Dr. Joseph Walker supported the vote of thanks to the officers, on whose behalf Mr. J. Ackery replied, taking the opportunity to urge upon members the importance of their loyally supporting their Society by every means in their power, and recalling to them the great debt of gratitude the profession owed to the Odontological Society of Great Britain.

The meeting then terminated.

Students' Society, London Dental Hospital.

Ordinary General Meeting, held December 8th, 1890, Mr. Leonard Matheson, President, in the chair. The minutes of the previous Meeting were read and confirmed.

The following gentlemen signed the obligation book and were admitted to the membership of the Society:—Messrs. Harwood, Tomlinson, Parris, Walker, Gillett, Fouraker, Taylor, Spurr, Hankey, Morley, Gardner, Townend, Rankin, Tisdale, Trott, Goodman, Prideaux and Steele.

The following gentlemen were proposed for the membership of the Society:—Messrs. H. W. Tremby, W. H. Harrison, and J. H. Morgan.

Messrs. C. F. Rilot and W. May were appointed to audit the Treasurer's accounts for the year.

The list of names of gentlemen recommended by the Council as office-bearers for the coming year was then read. No names were added to the list.

On casual communications being called for,

Mr. J. P. Smith exhibited a dressing of iodoform and wax, which had been in a tooth for three years, and which still smelt strongly of iodoform.

Mr. Preedy exhibited a dilacerated bicuspid.

The President then called on Mr. W. S. Holford for his paper on "Various Diseases that Affect the Teeth." (See page 49.)

Mr. Gask, in opening the discussion, commented on the rarity of the typical syphilitic tooth. He had been on the look-out for a long time for a case showing the notch well developed. In one case where he thought he had discovered the tooth he sought, it turned out to be only a pivot tooth, the edge of which had been ground down to suit the bite.

Mr. Matheson mentioned that although the typical syphilitic tooth is diagnostic of syphilis, still its absence does not prove that the disease is not present. He considered that one of the best means of treating honeycombed teeth was by porcelain inlay fillings.

Mr. J. P. Smith said it was the opinion of some surgeons, that syphilis occasionally affected the temporary teeth. The best place to see typical cases of syphilitic teeth was an ophthalmic hospital. Gout was a disease that had an effect on the teeth. In gouty patients the teeth are frequently found worn down, the enamel of the crowns being entirely worn away.

Mr. W. May described a case that had come under his notice of inherited syphilis, the patient having the true syphilitic teeth, and also suffering from interstitial keratitis. He explained the flattened appearance of gouty teeth, as being due to attrition from the patients grinding the teeth together during sleep.

Mr. Rankin also described a case of syphilis affecting the teeth that he had seen.

Mr. Bull said that there was only one case recorded of syphilis affecting the temporary dentition. He referred to Mr. Moon's theory of the formation of the syphilitic notch being due to a suppression of the middle of three denticles, of which the ordinary tooth is made up. He did not believe that stomatitis had as much to do with structural defects in teeth as was commonly stated. He thought that the explanation more likely lay in the fact that the enamel was developed from the epiblast, and consequently was liable to be affected by diseases that affected epiblastic structures.

Mr. Rilot, in speaking of syphilitic necrosis of bone, said that an important point to remember was that it was very liable to recur. He related the history of a case he had treated, where the necrosis recurred more than once, although the patient was strongly under the influence of mercury and iodide of potassium. The necrosis after the exanthemata was characterised by swelling out of all proportion to the local mischief. This class of necrosis frequently occurred in young life; he had seen it in a patient between five and six years old.

Mr. J. F. Colyer mentioned that rickets caused peg-shaped teeth with retarded eruption. He was of opinion that honeycombed teeth resulted from incomplete development.

Mr. Dolamore thought that the question should be viewed from a broad standpoint. It was easy to say that the syphilitic notch was due to the suppression of the middle denticle, but that did not explain why that particular part was suppressed. Besides, the development of the tooth only showed one papilla, and not three. The true syphilitic tooth had perfect enamel, and that was the reason that they were so seldom seen at a dental hospital. Honeycombed teeth might be hereditary.

Mr. Holford then replied to the various speakers. Syphilitic lesions did not show themselves till some time after birth, and that was the reason the temporary teeth escaped. The one recorded case of syphilitic temporary teeth was mentioned by Mr. Oakley Coles. The subject of his paper was such a wide one that it was impossible to touch on all its points.

A vote of thanks was then tendered by the President to Mr. Holford, and to the gentlemen who had brought forward casual communications.

The next Meeting was announced for January 19th, 1891. This would be the Annual General Meeting, and at it Mr. Coysh would read a paper on "Irregularities of the Teeth and their Treatment."

The proceedings then terminated.

REVIEWS.

The Micro-Organisms of the Mouth. By W. D. Miller, D.D.S., M.D., Professor at the University of Berlin. Philadelphia, S.S. White Dental Manufacturing Company.

The Amercan edition of this work, which has been announced for some time, has at length appeared, and it will, we venture to think, be found quite equal to the expectations formed of it. Dr. Miller's work in its broad outlines is well-known to us, but chiefly through scattered papers and articles in the journals. To students especially, the work before us will be invaluable, collecting together as it does all these researches and observations, with the addition of much material hitherto unpublished. The American edition is not merely a translation of the German work, but contains some supplementary matter, notably the chapter on methods of bacteriological investigation. The book is divided into two parts, the first part is entitled "General Bacteriological Studies with special reference to the bacteria of the human mouth," while the second portion is devoted to the pathogenic bacteria of the mouth. The first part commences with a clearly written outline of the morphology and biology of the lower fungi. We shall, however, receive with some hesitation the statement on page 12 quoted from Cohn and Mendelsohn, that light has very little or no influence on the development of bacteria. The recent researches of Professor Koch show that sunlight has a very strong retarding influence on the development of the tubercle bacillus, and Professor Pasini lately in the *Centralblatt für Bacteriologie und Parasitenkunde*, has shown that even diffused light has a retarding action on many bacteria, and that direct sunlight has a direct sterilizing effect on micro-organisms and retards their development. The section on fermentation contains some points of interest, Professor Miller showing that in the action of many organisms in beef extract sugar solution, in which lactic acid was formed, no carbonic acid was given off. "This process in which no gases are given off is not considered by Flugge to be fermentation at all." On the other hand, some bacteria were cultivated which in the lactic acid fermentation evolved such quantities of gas that "the gelatine in the culture tubes was completely torn to pieces. In some cases the pressure was even great enough to burst the tube." In these latter cases by-products were produced as well as lactic acid. The author also refers to former statements of his own that the course of fermentation frequently depends more upon the substratum than upon the micro-organism. The fermentation of a bacterium on white of egg producing an intensely offensive smell and a strong alkaline reaction, but when the same bacterium is brought into carbohydrates "exhibiting entirely different phenomena, an acid reaction, and total absence of bad smell." He concludes that we cannot draw a sharp line between putrefactive and fermentative bacteria. With regard to the interference of the excess of acid formed in the lactic acid fermentation with the further acid forming action of the bacteria, he shows that this does not occur in the mouth because such excess is either washed away, or combines with the lime of the teeth and tartar. In the chapter on biological studies of the bacteria of the mouth, the author, after discussing the use of the term leptothrix to describe many different organisms, and condemning the indiscriminate use of the term, describes the various organisms separated by himself and others from the oral cavity. The majority of those separated by Vignal were bacilli, whereas other observers have separated a large majority of micrococci. Dr. Miller explains this discrepancy by the fact that Vignal has used gelatine as the cultivation medium, while the others, with himself, had made use of agar agar as the substratum, and that probably different results were obtained owing to the different culture media employed. The difficulties met with in the treatment of septic pulp canals are perhaps explained by the fact pointed out by Dr. Miller that "the dental pulp presents especially the conditions essential to the formation of spores, which possess such a high degree of resistance." In discussing the several theories of decay, the author devotes considerable space to the criticism of the revived imflammatory theory of caries—a theory which has, we imagine, very few supporters out of the circle of its originators, and which appears to have absolutely no facts to uphold it. With regard to the electrical theory, the experiments here detailed seem to show very conclusively that the substance of the dentine when dry, is a non-conductor of electricity, the conductivity of the tooth to electric currents being due to the moist condition of the dentine, and consequently there can be no currents between tooth substance and filling. There may, however, be currents between two diverse fillings or between parts of a filling of different densities, but the oxidation of the metal that would result would soon cause a cessation of the action. One experiment distinctly shows that where bands of different metals in contact, clasp a tooth, currents are set up and sufficient acid liberated to decalcify the tooth where clasped by the band. The chapter on the microscopical appearances in caries is very well illustrated and clearly described. Turning to the etiology of caries the author says :—"Dental decay is a chemico-parasitical process consisting of two distinctly marked stages, decalcification or softening of the tissue, and dissolution of this softened tissue." The source of the acid is the food, and the saccharine and starchy parts of that food are the substances made use of by the bacteria in the fermentative process in which the decalcifying acid is produced. This acid, as is well-known, is chiefly lactic acid. Starch is quite as injurious as sugar, and gives rise to lactic acid quite as rapidly, the starch being first formed into grape sugar by the ptyalin of the saliva, and then into lactic acid by the bacteria. In the second stage of caries the basis substance of the dentine consisting of an albuminous substance, is acted upon by certain bacteria which have the power of converting coagulated albumen into soluble modifications, *i.e.*, peptonizing it. The action of bacteria on albuminous substances, which consists in converting coagulated albumen into soluble modifications, appears to be caused by a ferment of the nature of pepsine, but "while pepsine exerts its action only in the presence of acids, bacteria exert it in neutral or alkaline media also," hence "the albuminous substance, even when nsoluble, offers an excellent nutrient medium for bacteria" ; by this process Dr. Miller considers the decalcified substance of the carious tooth is dissolved and disappears. After discussing the predisposing causes of decay, the author gives the results of a number of experiments on antiseptics. The perchloride of mercury appears to be the most valuable germicide for mouth bacteria, but there are evident disadvantages in its use. Professor Miller has lately been trying fresh experiments with different materials, and we hope that he may be soon rewarded by finding an ingredient for mouth washes which may be as harmless to the system as it is objectionable to the bacteria. He somewhat deprecates the use of much tooth-powder containing insoluble ingredients, as he considers these clog the centres of decay. In the chapter on the antiseptic action of filling materials, the experiments go to show the great value of copper amalgam as an antiseptic filling material, and Dr. Miller recommends the incorporation of sulphate of copper in the materials used for capping exposed pulps. The latter portion of the book, which is devoted to the pathogenic bacteria of the mouth, draws attention to many points which are somewhat alarming to those who have not considered them seriously before. There is little doubt that the mouth exhibits all the conditions essential to an excellent cultivation chamber, a sustained temperature admirably adapted to the growth of bacteria—a moist condition of the chamber—the lodgment of particles of food which afford the necessary albuminous material on which they feed—and a continuous supply of oxygen necessary for the growth of the aërobic varieties. If we do not take the utmost care to keep our mouths in as aseptic a condition as possible, we are continually swallowing with the saliva and food, quantities of bacteria, many of them pathogenic, and in certain conditions of the system which allow of their rapid multiplication, these organisms may give rise to their specific diseases. The author brings strong evidence in several cases, to show that dyspeptic symptoms are often due to the presence in the stomach and alimentary canal generally of large quantities of fermentative bacteria, continually supplied from the fresh cultivations in the mouth. Very careful cleansing and disinfection of the oral cavity in the cases quoted, led to a disappearance of the symptoms. The work before us bears evidence of a large amount of careful research and diligent labour, it shows a very wide grasp of the matters with which it deals, no side issues necessary to the elucidation of the subject being omitted. The author is an enthusiastic worker and is fertile in experimental resources, every step of his work being guarded by careful experiment. He does not even hesitate to carry these out upon himself, and was ill on one occasion for several days in consequence of swallowing the contents of a cultivation tube of fermentative bacteria, to determine what influence certain of them had on the digestive process. The parasitic theory of dental caries, to which definite expression was first given by Messrs. Leber and Rottenstein, followed by the researches of Messrs. Milles and Underwood in England, and by the work of Dr. Miller in Germany, now stands on a well established foundation, and the successful production by Dr. Miller of artificial caries, which is quite indistinguishable from natural caries, has completed the circle of evidence. This work contains so many valuable hints and exemplifies so thoroughly the application of scientific research to practical purposes, that it should be in the hands of every medical and dental practitioner, and will probably prove the incentive to further research in several directions.

A SYSTEM OF ORAL SURGERY. Fifth Edition. By James E. Garretson, M.D., D.D.S. Philadelphia: J. B. Lippincott Company, 1890.

In perusing the thirteen hundred pages of this voluminous treatise, and taking into consideration the fact that the author has adopted the paragraphic style, at the first blush it seems difficult to realize that such a quantity of matter could—in the terse manner referred to—be put together on the subject of oral surgery as understood generally. But Dr. Garretson evidently refuses to be tied down by the narrow limits of conventionality, and not only soars into the domains of surgical and mechanical dentistry, but skims into the regions of diseases of the nose, throat, and larynx, the surgery of the skull, and diseases of the skin. Indeed, it would seem that the student of oral surgery must not only be able to diagnose such a trifle as *tinea sycosis*, but be able to handle his stethoscope and without hesitation detect a *sibilant rale*, if necessary. The author in his preface says that oral surgery is a big subject, and reading his book convinces us of it. Whether it is advisable to attempt the handling of so many and diverse subjects between the covers of a single volume seems open to question, and we are bound to admit the Herculean nature of the task which the author of this work has imposed upon himself. If Dr. Garretson has failed it is because he is human. The portions of the book likely to prove of most interest to our readers are those immediately relating to dentistry, and to them our remarks will be confined.

The dental subject matter proper commences with an account of the anatomy of the teeth, and we are at once confronted with several statements which certainly appear new to the student of dental anatomy. For instance, we are told that cementum "so closely resembles bone proper as to be liable to the diseases of that substance"; and later on we find it stated that "teeth are found resistive of disease in proportion to the solidity of the alveolar process." Both statements would be interesting in a pathological sense, if true, but the substantiation of either would prove rather a difficult matter. One of the prevailing faults of this book in its treatment of dental diseases is "loose pathology," and by the term we mean either the shelving of difficult points, or the random advancing of theories as though they were proven facts, without even an attempt to show any authority which might justify even their provisional acceptance. For a modern writer to speak frequently of our great English pathologist as "Mr." Paget, is to shake one's faith in his grasp of modern medical literature as well as his claim to any accurate acquaintance with modern pathology.

The opinions of the author on extraction are somewhat archaic, and the modern student will be not a little surprised to learn that "the operation of extraction is always to be preceded by that of thorough lancing"; but whether he will grasp the directions as to the use of the elevator is problematic. Here they are: "In the use of the elevator, a very happy result is not infrequently secured by applying the blade to the inner surface of the root, carrying the shank across the mouth, and making a fulcrum ot some convenient opposite tooth." Speaking of local anæsthetics we are told that "a mixture of chloroform and laudanum in equal parts is lauded by some. To apply this, it is only necessary to saturate a tuft of cotton and lay it against the tooth to be extracted." We are afraid the worthy doctor has been imposed upon, as we never knew before that a tooth was supposed to possess the absorptive power indicated. In lancing the gums of infants several good hints are given, but the following directions for controlling any hæmorrhage that occurs may possibly provoke a smile. "A little cobweb, as found in the cellar, wet with borax water, and then dipped in bayberry powder, will, in ninety cases out of the hundred, control the hæmorrhage when laid over the incision. The application to be secured by passing over it, if necessary, one layer of a delicate roller." Should this and other means fail we are directed to bring the lips of the wound together with sutures. Whether catgut or wire is to be used is not stated.

The subject of dental therapeutics is one which is neglected—at least in this country, but in the volume before us there are *recipes* for all dental ailments in great profusion. As most of us are generally on the look out for something good in the shape of tooth-powder, it may not be amiss to quote one of Dr. Garretson's formulæ.

℞ Ossis Sepiæ pulveris ʒ ii
Cretæ Præparatæ ℥ ss.
Coralli albi pulveris ʒ ii
Iridis Florentinæ pulveris ℥ i
Carbonis Ligni pulveris ʒ i
Lapidis pumicei pulveris ʒ ii
Olei limonis, q.s.

Oxychloride of zinc is greatly lauded because of its therapeutic action, but we cannot altogether follow the author when he says: "Zinc so introduced into a tooth, will not infrequently be found followed by such inflammatory consolidation that parietes from being soft and of loose structure, are seen to become solid and denes to an extent that makes them entirely self-protecting—they have become glass-like in hardness; this occurs, however, only when the vital force is able to respond to the excitation." Those practitioners who are fond of filing the teeth will now be able to continue their practice supported by a statement which was probably unknown to them hitherto. "The cure of caries by filing finds its explanation precisely as expressed in the employment of zinc. The file cutting away the weak point, and exciting, through the exposure of the dentine, vascular response, structural consolidation results, and thus external or offending agents are shut out; precisely on the same principle as a ball may become encysted in a bone and remain for years innocuous." The use of arsenic in the destruction of pulps is dealt with at length, but the passage which interests us most is the following: "Such exposure effected, the paste may be at once *pricked* into the part by means of a very *sharp-pointed needle*. By such an operation, a pulp is to be destroyed almost without pain, particularly if cocaine be previously used as an obtunder, and it may be removed from its cavity within a period of time not exceeding *fifteen minutes*."

The subjects of dental cyst and alveolar abscess are hopelessly confused; indeed, one might be quite justified in believing that the conditions were entirely identical in the author's mind. The treatment of cyst recommended on page 277, where a canal with an enlarged apical foramen was *filled with gold*, is not likely to find much favour as expedient—even if possible. In treating of *pyorrhœa alveolaris* we have the following startling announcement: "Salivary calculus and serumic deposits, the latter various as to expressions, but always a resultant of degenerative conditions of the mucous cysts surrounding the necks of the teeth, are to be instanced as the most common causes." A good deal of space is devoted to prosthetic dentistry, but we cannot say that the subject is dealt with in a successful manner. Two instances of the value of this portion of the book may suffice. The author likes wax for impressions, and when an impression has been run in plaster, he removes the wax by means of a warm knife-blade. The process is at best leisurely, but the beginner would probably in time begin to yearn for promotion from the plaster bench. We thought that *silver* plates were almost prehistoric; Dr. Garretson likes them (p. 610), and as he lives in a "free country," there the matter rests. Patients over here used to complain that their silver plates disappeared without being stolen, but perhaps the climate on the other side of the ocean is different.

TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION AT THE THIRTIETH ANNUAL SESSION, HELD AT EXCELSIOR SPRINGS, AUGUST, 1890. Chicago: H. D. Justi, The Dental Review Company, 1890.

Those practitioners who are inclined to complain of the unsatisfactory condition of the Dentists' Register (including as it does the giant advertiser *et omne hoc genus*) may derive a certain melancholy satisfaction from a perusal of these Transactions, inasmuch as they reveal that an equally undesirable state of things is threatening to make matters still worse in the United States. The work of the Association is carried on by means of Sections entrusted to deal with particular subjects. On this occasion, Section II., which includes Dental Education, seems to have monopolised a great deal of time and attention, judging from the papers read, the discussion which followed, and the amount of space occupied in the Transactions. Most of us on this side of the Atlantic, who are interested in this matter, have some vague idea that there are a large number of "graduates" turned out every year from a large number of more or less reputable "colleges" in America; but probably few know the actual conditions under which the body of dental practitioners is being recruited in the United States. Much light is thrown upon this question by a communication in another place in this month's DENTAL RECORD; but there are other references in the volume before us, and perhaps it becomes our duty to take advantage of this opportunity and present some of them to such of our readers who may not otherwise find occasion to make themselves acquainted with this important matter. Most old-world practitioners will sympathise with those American dentists who represent the true and the good amidst a crowd of men "graduated" from indifferent colleges. We find it recorded that in one State the incorporation of dental colleges and infirmaries is almost co-equal with the issuance of dog licenses. The abuse seems difficult to deal with, for the report states, "The Section is not prepared to offer any special remedy, but hopes that members of the Association may reflect on the question, and be prepared to adopt some means to check the evil before its serious consequences become more marked." From this report, presented by the Chairman of the Section, we also gather that the number of dental colleges in active operation at the present time is thirty-three, that from twenty-nine of these colleges there were graduated nine hundred and sixty-three persons since the last meeting of the Association—an increase of one hundred and sixty-seven over the preceding year. The ratio of increase is three times as great as it was last year. The total number of graduates during the years 1886-1890 was three thousand six hundred and five. Most of the contributions to the Section are certainly valuable as a means of bringing about a solution of the difficulty; but on reading through the discussion which followed, it would seem likely that education must proceed in more directions than one before the remedy is found which will be acceptable to all. For instance, in spite of, and perhaps in protest against, the statement in the report that the medical graduate is now a laughing-stock, and that probably the dental will be the same, one speaker delivered himself as follows: "Let us have a uniform law, but let us be kind and good, and encouraging to the young and the poor men, and help them; for, God knows, we have not got enough dentists in this country. There is a fear in the minds of the dental profession that we are going to be overrun. We have not got enough dentists in America. This is no 'pent-up Utica.' Dentistry means something to America. We are passing all other nations. America can make a better dentist in three years than all Europe can in ten. She has done it. She has made the best doctors in the world, and the best lawyers in the world." We do not know how far the other members of the Association agreed with these views ; but, as an antithesis, we may present the reader with an extract from one of the papers read, which has occasioned us much searching of mind. It seems to take one back to the celebrated judgment of the learned Pantagruel. "The term itself, education, signifies to draw out of the storehouse of the mind the excerpts of cancelled values of the various stages of mental activity operated in consciousness, from the sense of deficiency, to the sense of fullness of the mental receptacles of the values of all the minor propositions, as bases of the demonstrations capable of being formulated and held in consciousness ready for use, in the efforts to communicate in a satisfactory manner the mental processes through which they have been acquired. This involves a comprehension of the work in the progress of its growth, to the completion of the wording representing the stages of mentation through which we are carried to attain a full understanding of the processes, so that they may be recorded as knowledge, to be applied to teaching, or any of the exercises pertaining to the rectification of irregularity, however induced, in the understanding and the execution or practicalization of the knowledge pertaining to the healing of mind and body." Perhaps it is easier to understand the writer when he says, "If we are to have the coming times distinctly in advance upon the already effete teachings, we must be awake to something better than the long didactic preachments that so tenaciously hold the field in church and state and in professional and societary convocations."

In Section III., the report on Operative Dentistry alludes to root-filling which had received an unusual amount of attention during the year. With regard to sensitive dentine it is said, "The numerous efforts made to secure painless operations on the teeth have given us many methods and remedies that accomplish this in such degree as to render tolerable many operations that would otherwise be unbearable, still we are unable to report at this time any reliable method or remedy for this troublesome accompaniment of operations on living teeth, which is entirely harmless to the delicate organism of the tooth, or is unobjectionable in its application." With regard to methods of filling there is nothing new to report. The Chairman of Section V. contributed a paper on "Synthetic Carbolic Acid." The report of Section VI. deals with the arrangements being made for a systematic examination of prehistoric skulls throughout the country. Other subjects dealt with were Dental Notation and Implantation, It is intended, if possible, to adopt an International system of Notation at the meeting in Chicago, 1893. Two papers were read in Section VII., one showing that a true alveolar abscess may occur in connection with a tooth of which the pulp is still living ; the other communication records cases in which roots of teeth have been amputated through the alveolar process. The report of Section I., dealing with Prosthetic dentistry and allied subjects, appears towards the end of the volume. In Section IV., Histology and Microscopy, there were lantern exhibits.

We notice the following disclaimer on the first page:—"The American Dental Association, although formally accepting and publishing the reports of the various standing committees, and the essays read before the Association, holds itself wholly irresponsible for the opinions, theories, or criticisms therein contained except when otherwise decided by special resolution—*Constitution*."

These Transactions are well printed and bound, and although the Constitution of the Association differs from that of the British Dental Association, this record of work and opinions will prove interesting reading to those who take an active part in similar meetings in this country.

OBITUARY.

JOHN MARSHALL, F.R.S., F.R.C.S., LL.D., M.D., &c., President of the General Medical Council, and sometime President, R.C.S. Eng.

In the death of this distinguished surgeon the profession has lost a conspicuous ornament and the world a large-hearted and courtly gentleman. To know Mr. Marshall in public life was to esteem and admire him; to be admitted into the inner life of his friendship was a privilege which, when once enjoyed, was to be ever coveted.

John Marshall was born at Ely, 1819. His father, William Marshall, a solicitor, was a man of considerable ability, a good naturalist, and held in high repute by those who knew him. Mr. Marshall's schooling was given at Hingham, in Norfolk, whence he went to be apprenticed to Dr. Wales, of Wisbech. Subsequently coming to London, he became a student at University College, in due course entering the hospital. He was a distinguished student and noted for his clearness of intellect and power of application. He became house surgeon and subsequently private assistant to the distinguished surgeon, Liston. Upon leaving University College Hospital, he commenced professional life as a general practitioner; but, upon his election as assistant surgeon in his own school, he devoted himself to surgery proper. A man of wide interests, a vast capacity for work, and brilliant abilities, Mr. Marshall's attention was distributed over a far extending circle of subjects. Thus he served his own hospital and school as Curator of the Anatomical Museum, Demonstrator of Anatomy, Demonstrator of Practical Surgery, Demonstrator of Operative Surgery, and, finally, Lecturer on Surgery, a position he sustained for sixteen years. He filled the posts of assistant, full, and consulting surgeon to University College Hospital, was surgeon and, finally, consulting surgeon to the Hospital for Consumption, Brompton, and for sixteen years lectured on anatomy in the Royal Academy of Arts. In connection with this course, it was Mr. Marshall who first solved satisfactorily the difficulties attendant upon teaching anatomy to mixed classes of male and female students. In connection with the College of Surgeons, the subject of our memoir, having taken his fellowship in 1845, served as a member of the Board of Examiners in Anatomy and of the Court of Examiners in Surgery; he was also thrice elected member of the Council, and in 1883 became President of the College. He examined on several occasions for the University of London. Mr. Marshall's influence in moulding recent reforms in the conduct of the examinations of the College of Surgeons, and his activity in the promotion of the formation of the conjoint scheme of examination, are too recent to need more than passing mention. But, besides all these outlets for energy, Mr. Marshall was a Fullerian Professor of Physiology at the Royal Institution; he also lectured upon the same subject to ladies and lady teachers at University College. Upon Art anatomy he lectured in the Government schools, at Marlborough House, and subsequently at South Kensington; but even this long list falls far short of a full chronicle of the doings of Mr. Marshall's busy life. As President of the Royal Medico-Chirurgical Society, Mr. Marshall was singularly felicitous in the conduct of its business, leading discussion and attracting valuable communications from all sources. He served also upon the Council of the Royal Society, of which he was a distinguished member. In literature, Mr. Marshall held a distinct place. Quain's "Anatomy," in its earliest editions, was enriched by his pen, while various works upon physiology and anatomy were given by him to the profession. It is perhaps more in Mr. Marshall's minor writings, his orations, lectures, and addresses, that he shows to greatest advantage. Both as a speaker and writer he possessed a great charm, his command of language being great and his style lucid and racy. But the dental profession know more of Mr. Marshall in his capacity, at first as a member, and subsequently, upon the retirement of Sir Henry Acland, as President of the General Medical

Council. He always had the true interests of our profession at heart, and even when compelled to differ from those of us who would have more autonomy than we at present enjoy, yet ever was Mr. Marshall eager to learn both sides of every question, and as ready to champion that which in his mind he considered was the best for the greatest number. Of Mr. Marshall's public life we cannot speak more at length, although we can hardly omit to notice the value of his recommendation, of which he himself was justly proud, viz., that hospitals should be constructed of circular wards. This has been successfully done at Greenwich, Hampstead, Burnley, Hastings, and Liverpool, and the Central Northern Hospital of London, as well as at several places abroad. In private life, Mr. Marshall's charm of speech, vivacity and lovable nature, made his a personality which, being missed, can never again be met, and friends and old pupils, whose affections he so fully won, will cherish his memory as one of the happiest recollections of "those days, those days which come not again"

EDWARD BELLAMY, F.R.C.S, *ob.* Jan. 4, 1891.

MR. BELLAMY, as Senior Surgeon to Charing Cross Hospital, was well known alike to students and practitioners of dentistry. Born at Blandford St. Mary's, Dorsetshire, he was educated at Clapham Grammar School, passing from there to King's College, London. He received his medical education on the medical side of that institution, assisting the late Mr. Partridge and enjoying the instruction of the accomplished surgeon, Sir William Ferguson. Mr. Bellamy took his M.R.C.S. in 1863, his F.R.C.S. four years later. Serving at first as surgical registrar at King's, he then went to Charing Cross as Demonstrator of Anatomy, subsequently holding the posts of assistant surgeon, surgeon, and lecturer upon surgery. Mr. Bellamy was not only an expert surgeon, but was also an accomplished artist and a warm friend of the Arts. As an author, Mr. Bellamy worked hard, and in many cases not only wrote his books but illustrated them with pencil and engraving. All will deplore the early loss of so ardent and successful a member of the surgical craft as Mr. Bellamy. He died of heart failure coming on after two days of an attack of pneumonia, he was aged only forty-eight.

THE DENTAL RECORD, LONDON: FEB. 1, 1891.

The importance of the study of bacteriology to all students of dental pathology has been long recognised, but it is only within the last few decades that practical expression has been given to the theoretical acceptance of this fact. The Odontological Society of Great Britain has done so much good scientific work, that we naturally turn to see whether she has been to the fore in promoting this advance, and we are not disappointed. Further, the International Congresses of 1881 and 1890 are conspicuous, we are thankful to say, largely owing to the enthusiasm and scientific acquirements of Englishmen, as especially noticeable for records of excellent research work in this direction, while the Transactions of the Odontological Society have recently been enriched by papers and demonstrations of great value which deal with similar subjects. Dr. Miller, of Berlin, whose splendid work has now become common property through the publication of his valuable book, which is elsewhere noticed in our columns, has done much to promote our knowledge of dental bacteriology. We are pleased also to notice that our contemporary, the *Journal of the British Dental Association*, has for some time reserved a column for microscopy in relation to dental pathology, so aiding in the good work. Undoubtedly the regular teaching of dental bacteriology must before long find a place in the normal curriculum of our students. We hear that it is informally taught in some of the courses given at one of the London dental schools, and doubtless this will pave the way for its general adoption as "a subject" among our students. Up to the present there has not been among dental students enough systematic work with the microscope, macroscopic pathology having too often satisfied where only careful microscopy could efficiently explain. Change of occupation being the best and healthiest form of recreation, it may not be amiss to remind those of our readers who at the end of a busy day seek a change from the irksome posture and sameness of a dentist's life, that microscopy, whether of normal or of diseased tissues, will supply amusement together with profit, interest combined with the gratification that time spent over it is well spent, alike for the individual and the commonwealth of science.

Dental Hospital of London, Leicester Square.

In consequence of the overcrowding of the stopping department at this hospital, it has been found necessary to extend the time for it to be available for the treatment of patients, and this has necessitated the appointment of five additional Assistant Dental Surgeons to take charge of that department during the afternoons. This change has long been foreseen, and its accomplishment has we believe been received with satisfaction alike by the staff and the students.

Dental News.

VICTORIA DENTAL HOSPITAL OF MANCHESTER.

The fourth annual dinner of the past and present students of this Hospital was held at the Grand Hotel on Saturday, Dec. 13th. Dr. Parsons Shaw presided; and among others present were Prof. Young, Dean of the Medical School; Mr. H. Planck, Dean of the Hospital; Mr. J. W. Smith, F.R.C.S.; most of the hospital staff, and several friends. Principal Ward, of Owen's College, Mr. J. Hardie, F.R.C.S., Prof. Stirling, of the Medical School, and Mr. Leonard Matheson sent apologies for unavoidable absence. Mr. H. Planck, in proposing "The Manchester Medical School," spoke of its fame in the world of medical science and of its advancing prosperity and success, as exemplified by its recent extraordinary development. Prof. Young, in response, remarked that it was now over 200 years ago since the first course of lectures on anatomy was delivered in Manchester; the Medical School, which was not established for many years after, was the first to be founded in the provinces. Its development since that period was largely owing to its association with the Manchester Royal Infirmary, which had been so long identified with medical progress in the city of Manchester. From the time the Medical School became associated with the

Owen's College it both gave and received an impetus that brought it not merely into a position of distinction, but into the first rank of medical schools in England. Mr. J C. Stokoe, in proposing "The Staff of the Victoria Dental Hospital," spoke of the indebtedness of the public to those who undertook such a position, and also acknowledged the advice and assistance so freely given to the students. Mr. G. G. Campion in response referred to the decision to appoint a Lecturer in Operative Dentistry at Owen's College as tending to draw the College and Hospital more closely together. He also emphasized the fact that dental operations were becoming more and more conservative in their nature. Mr. J. W. Seville proposed "Our Guests and Visitors," and, in response, Dr. Smith expressed the pleasure it had given him to be present, and commended the *esprit de corps* obtaining amongst the dental students, which was manifested by the fact that gentlemen had travelled from places so far distant as Exeter and Aberystwith in order to be present. Mr. Simms gave "The President," and referred to the anxiety Dr. Shaw had always shown to advance the cause of the profession, and pointed out that his maxim was that the best way to elevate dentistry was for each individual dentist to do all in his power to elevate himself.

The toasts were interspersed with vocal and instrumental music, contributed by Messrs. G. Kershaw, J. C. Lingford, H. S. Planck, C. H. Smale and J. H. Sykes, and some capital recitations by Messrs. R. H. Minshall and J. S. Whittaker.

Alleged Unskilful Dentistry.

At the Birmingham County Court, before his Honour Judge Chalmers and a jury, an action was heard by which William Thomas, a joiner and carpenter, living in Tiverton Road, Selly Oak, sought to recover from Frederick Frobisher, chemist, of Selly Oak, £50 damages for injury and loss, which plaintiff alleged he had sustained by reason of the negligence or want of a proper degree of skill or care on the part of the defendant in extracting one of plaintiff's teeth. Mr. Tyler appeared for the plaintiff, and Mr. Vachell for the defendant.

Plaintiff, who is a young Welshman from Dinasmawddy, in Merionethshire, said that in December, 1889, soon after he came to ive in the neighbourhood of Birmingham, he was suffering from toothache, and was induced by a friend to visit the defendant for the purpose of having the aching tooth extracted. Defendant exhibited in his shop window a card with the words "teeth carefully extracted."

Defendant placed him in a chair, and having put "a sort of a screw" into his mouth, pulled his head down-wise, then to the right, and then to the left, but did not succeed in dislodging the tooth. He then told him to hold his head back, and finally, after a lot of tugging, got the tooth out. Some days afterwards his face became very painful, and he visited Mr. Payne, a surgeon, at Selly Oak, who treated him. On the 24th December he went home to Dinasmawddy for Christmas, and while there his face became much worse and he had to call in Mr. Williams, a surgeon there. He remained under his treatment until March, and then returned to Birmingham, and until quite recently had been a patient at the Queen's Hospital. He had had there operations performed on his jaw, and had been told that it would eventually get better, and he would be disfigured for life. He had in consequence of this injury been out of employment eight or nine months, and lost from £70 to £80 in wages alone.

Mr. Tyler's allegation was that the defendant had extracted the tooth in such a careless and unskilful manner that he had fractured the plaintiff's jaw, and that for this gross negligence he was liable to compensate the plaintiff.

Mr. Arthur Ward, surgeon dentist, of Birmingham, said he examined the plaintiff's jaw about three months ago, and from the appearance of the jaw, and the description of the operation which plaintiff gave him, he came to the conclusion that unnecessary violence was used in extracting the tooth. The outside of the jaw was out of place, and there appeared to have been a slight dislocation, and also a fracture of the bone. In that examination Mr. Ward said the appearances were not inconsistent with the removal of diseased bone by a surgical operation.

Mr. Williams, the surgeon from Dinasmawddwy, said when plaintiff came to him he was suffering from inflammation of the right side of the lower jaw, and from the appearances and what plaintiff told him he came to the conclusion that the injury was the result of the tooth-drawing. He found broken bits of bone in the jaw, and these bore out the theory of great violence. It looked as if a piece of the socket of the jaw had been pulled away with the tooth, and there was a great discharge of matter. The jaw would never resume its normal shape, and there would be a permament scar on his face from the subsequent operations. In that examination witness said inflammation of the jaw was sometimes set up idiopathically, but this was rare in healthy persons, and he thought that if it had arisen in this way with the plaintiff he would have had pain and swelling for a much longer period than he said he had. Apart from the history of the case there was nothing inconsistent with inflammation set up idiopathically, but knowing the plaintiff and his family well, he did not think it likely that it could have arisen in that way.

William Arthur Payne, M.R.C.S., of Selly Oak, said when plaintiff consulted him in January last in reference to the state of his jaw he examined it and found marks of a recent fracture and signs of inflammation of the substances and covering of the jaw. He did not think that was due to unskilful extraction of a tooth. He rather thought the bone was soft from previous inflammation, and was therefore easily broken when the tooth was extracted. He thought plaintiff was suffering from periostitis when he went to have his tooth out, and there was no appearance of any bungling or unskilfulness.

In cross-examination by Mr. Vachell, witness said that when he saw plaintiff on the 8th December, 1889, he was certainly suffering from periostitis, and he thought it highly probable that he was suffering from it when the tooth was extracted. Frobisher, the defendant, had been at Selly Oak for about fifteen years. He did not advertise himself as a dentist, but witness had sent patients to him to have teeth extracted, and had also borrowed instruments from him. He could not say whether he was a skilful operator or not, but he had heard no complaints from his (witness's) patients who had had teeth extracted by him.

Plaintiff, recalled by the Judge, said there was a small hole in the top of the tooth which was extracted.

Mr. Vachell submitted, at the close of the plaintiff's case that there was no case to go to the jury of negligence.

His Honour agreed, and after hearing Mr. Tyler, told the jury that before the case could go to them, plaintiff must not only prove that he had suffered, but make out a *prima facie* case of negligence, and he (the Judge) held that he had not done so; that must therefore be a non-suit with costs. Execution was suspended for a month, pending an appeal.

Alleged Robbery of Dental Instruments.

George Murdock, forty-five, a clerk, who refused his address, and James Robinson, a boiler maker, of 49 Princes Road, Lambeth, were charged before the Kingston Borough Police Court, with being concerned together in stealing twenty-one pairs of dental forceps, twenty hand pluggers, ten malleting pluggers, nineteen hand rose drills, and one book of Scott's poems, value £10, the property of Herbert Bellamy Garnett, dentist, of 25, High Street. The prosecutor identified the whole of the articles produced as his property, and gave evidence as to their value. The instruments, he said, were in a cabinet in his surgery until three o'clock on the previous afternoon, and the book of poems was in the waiting room at the same time. About half-past two in the afternoon he was called to St. James Road, and left his surgery in charge of his page boy. When he returned he found the prisoner Murdock in the surgery. He asked the witness if he could recommend him as a man nurse, but he told him he could not think of doing so, and his suspicions not being aroused, he let him out. When the man had gone he asked his boy whether he thought anything had been taken, and upon looking into a drawer in the surgery he missed all the instruments detailed above. Witness proceeded to the police station, and was afterwards walking along Eden Street with a detective when he again saw the man, who was then in company with Robinson. The men were apprehended, and upon being searched at the station all the property was found upon Murdock. Frederick Fry, the prosecutor's page boy, deposed to Murdock going to Mr. Garnett's house while that gentleman was absent, and saying he wanted a tooth drawn Witness showed him into the waiting room, but subsequently he asked him to take a seat in the surgery, where he remained until Mr. Garnett returned, which was about ten minutes. P.C. (562) Borlase proved seeing the prisoners together prior to their going to the prosecutor's house, and P.C. Jourdan, who saw them walking about on three occasions on the previous afternoon, proved that they were together after the robbery had been committed. Robinson said he knew nothing of the affair at all, and Murdock confirmed this statement, adding "If either of us ought to be punished it's me. That man knows nothing whatever about the affair." Robinson: "He told me he was going after a place as sick nurse." The magistrates remanded the prisoners until next Wednesday.

The World's Columbian Dental Meeting.

THE American and Southern Dental Associations have issued the following circular with reference to a projected monster meeting of the profession at Chicago in 1893:—

TO THE PRACTITIONERS OF DENTISTRY THROUGHOUT THE WORLD.

The Southern and the American Dental Associations, at their respective annual meetings held during the past summer, by a unanimous vote of each body declared in favour of utilizing the great occasion of the World's Columbian Exposition, to be held in Chicago in 1893, by organizing a world's meeting of the practitioners of dentistry, to be held August 31st to September 10th, 1893.

In pursuance of this resolution, a committee of five from each body was appointed, and the joint committee so created was authorized to add five more to its membership, thus constituting an Executive Committee clothed with full power to take such action as in its judgment it should deem best to carry out the objects of its organization, such action to be final and binding.

The objects had in view by the two great representative bodies authorizing and inaugurating the movement for the holding of "The World's Columbian Dental Meeting" are thus broadly and tersely set forth by the Executive Committee:—

"The bringing together for professional, scientific, and social purposes the dentists of the United States and of all other countries."

It is the desire, as it will be the effort, of the Executive Committee to so justify the trust reposed in it that the contemplated meeting shall prove a brilliant and long to be remembered success. It stands pledged to do whatever may be in its power to make the occasion contribute notably to the elevation of the profession, to stimulate the spirit of research, to strengthen fraternal courtesy, and to promote cordial co-operation among all who desire the advancement of dental science and art. The aim would be too limited if it included less than this, and the enterprise will be a failure if it fall short of a realization of this ambition. For the accomplishment of these objects the hearty assistance of every college faculty, of every State and local society, and of every reputable dental practitioner, is earnestly solicited. All practising dentists outside of the United States are cordially invited to participate in the meeting, without contributory cost ; and there is reason to believe that the invitation will be accepted by large numbers of foreign dentists.

We desire and expect the presence of distinguished representative dentists from almost every civilized country, and nearly all of note in our own country, resulting in the largest gathering of dental practitioners in the history of the world.

Information as to the progress of the work will be communicated through the journals from time to time, and meanwhile every dentist is urged to do all in his power to forward the objects sought.

In behalf of the Executive Committee,

W. W. WALKER, *President*,
67, W. Ninth Street, New York City.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

A USEFUL FILLING.

To the Editor of the "DENTAL RECORD."

DEAR SIR,—It has occurred to me to give my experience of a stopping that I have found extremely good and reliable for stopping teeth that are very badly decayed, such as molars with only a portion of the wall standing, and for those cavities on the labial portions of the molar teeth, and the posterior surface of the cavities, and in fact, any tooth that requires a good, dense, *plastic* stopping.

I make it with fossiline and amalgam, mixed in the following proportion. I take a half ounce of standard amalgam, and mix thoroughly with the contents of a bottle of fossiline powder ; and for mixing, I use the liquid supplied with the fossiline. It should be mixed to a stiff paste and packed with oiled instruments, and burnished carefully with oiled burnishers.

Faithfully yours,

Handsworth. J. W. TURNER.

P.S.—Dr. Damman's amalgam also works extremely well in the same way.

NEALE'S MEDICAL DIGEST.

To the Editor of the "DENTAL RECORD."

DEAR SIR,—We notice in the *Lancet* of Nov. 8th, p. 1011, that Dr. Neale proposes to issue a cheap edition of the *Medical Digest* at 10s. 6d. per copy, should sufficient subscribers come forward to cover the cost, or nearly so, of the work, which will exceed £1,000.

Comparatively few practising dentistry are aware of the many valuable hints they may derive from this book, which, at the price, is well worth adding to their libraries.

Considering the immense amount of labour the *Medical Digest* has and will cost its author, we sincerely hope he may receive encouragement enough to publish a cheap edition. To secure so desirable an end, all who wish for a copy should send a postcard to Dr. Neale, 60, Boundary Road, South Hampstead, N.W. If published, the book will be issued in June, 1891.

I am, Sir, your obedient servant,
R. DENISON PEDLEY, L.D.S. and F.R.C.S.E.,
Dental Surgeon to the Evelina Hospital for
Sick Children, Southwark.

[We can endorse the remarks of our correspondent, for there are few more useful books than Dr. Neale's Digest.—ED. D.R.]

An Experience with Cocaine.

MORE or less bizarre effects of cocaine have been recorded, but those which Dr. J. W. Stickler records in the New York *Medical Record* are, we believe, unique. "An adult in good general health came to his office complaining of severe toothache. To relieve the intense pain, the doctor injected, hypodermically, in the cellular tissue between the cheek and gum, opposite the left wisdom tooth, about five drops of a four per cent. solution of cocaine. Almost immediate relief from pain was experienced, but in less than five minutes the entire left side of the face became enormously swollen, tense and painful. The inner surface of the cheek projected so far into the oral cavity as to render perfect closure of the mouth utterly impossible. So rapid and extreme was the swelling of the soft parts, that the doctor concluded he had punctured one of the larger blood-vessels, thus permitting a free outflow of blood into the loose connective tissue of the cheek. In the course of an hour the pain became so intense, and the tension so great, that it was determined to relieve him by operative measures, so certain did it seem that the swelling and tension were due to the escape of blood, which had coagulated, and could in that condition be easily removed. The patient was therefore anæsthetized, and an incision made through the mucous membrane of the cheek and the underlying tissues, sufficiently deep and long to permit the introduction of the index-finger, with which every part of the interior of the cheek was examined without finding any evidence of the presence of a large blood-clot. This was quite a surprise, for not only was the cheek enormously swollen and tense, but semi-fluctuating to the touch. The slight hæmorrhage from the small vessels along the edges of the cut tissues diminished appreciably, for a few moments, the swelling of the cheek, but shortly after the wound made by the knife had been closed, the tension and swelling became as marked as before the operation. This condition was not wholly relieved for several days. It is probably true (writes the author) that the swelling of the cheek, in this case, was due to the paralyzing effect of the cocaine upon the vasomotor nerves, causing thus a dilatation of the blood vessels, with consequent intense congestion. Having had this experience, I would not again inject a solution of cocaine (even a four per cent. solution) into loose areolar connective tissue in the region of the face, without, at least, informing the patient of the possible result, and I am quite confident that if my patient had known, prior to the injection, what he subsequently learned about the peculiar effect of cocaine upon him, he would have objected to its use. I consider the employment of a ten per cent. or fifteen per cent. solution of cocaine both unnecessary and hazardous for the production of local anæsthesia, such as is necessary for the painless removal of small tumours. Cocaine is an agent of great power and usefulness, but one which must be used with great caution."

The explanation which Dr. Stickler offers is somewhat unsatisfactory, but his case is most interesting and his warning justified by the many untoward experiences which have now been put upon record.

Management of Primary Dentition.

According to Dr. Monti, *Journal de Sciences Medicales de Lille.* all interference with primary dentition should, as a general rule, be proscribed. Hence he considers as injurious the ordinary practices, as, for example, biting on hard objects, bathing the gums with so-called emollient substances, etc.

The only necessary measure of precaution is to keep the buccal mucous membrane in a state of perfect cleanliness. It is best, during dentition, to wash the mouth several times daily, either with pure water or antiseptic solutions. Among the latter, the most efficacious are the following :

℞.	Acidi boracici	gr xiv.
	Aquæ destillatæ	℥ viii.
	Tinct. myrrhæ	*m* xiv.—M.

Or,

℞.	Sodii salicylatis	gr. xiv.
	Aquæ destillatæ	℥ viii.
	Tinct. myrrhæ	*m* xiv.—M.

When the milk teeth have appeared, they should be cleansed with a very soft brush, using either one of the preceding solutions, or a suitable dentifrice. The following, recommended by Zsigmomdy, gives excellent results :

℞.	Magnesii carb.	
	Pulv. saponis	aa ʒ iiss.
	Pulv. ossis sepiæ	ʒ iiss.
	Essentiæ menthæ...	gtt. iv.—M.

In very young children the following may be better :

℞.	Magnesii carb.	aa gr. lxxv.
	Cretæ præparat.,	
	Sodii salicylatis	ʒ iij gr. xiv.
	Essentiæ menthæ...	gtt. iv.—M.

When the milk-teeth commence to decay they should be filled at once, that they may be preserved as long as possible.

The Death of Dr. C. R. Coffin.

In the death of Dr. C. R. Coffin, of South Kensington, on the 29th of December last, at the age of sixty-five, the profession has lost a valuable worker. Although Dr. Coffin has for several years taken no active part in professional affairs, his work and its results still linger in the thoughts of many. A quiet, unobtrusive, but keenly observant and appreciative mind, is an adornment, but is not too common. Dr. Coffin will be remembered alike for the purely technical work with which his name is associated, as well as for the earnestness with which he took up and worked in the interest of the British Dental Association. Dr. Coffin was born and educated in the United States, studying his profession at Boston, and obtaining his qualification at Baltimore College in 1853. In 1855 he came to England, at first practising for a few years in Manchester, and subsequently in London. As is well-known, Dr. Coffin made some interesting experiments on the properties of gold foil in removing the excess of mercury from amalgam fillings.

THE DENTAL RECORD.

VOL. XI. MARCH 2ND, 1891. No. 3.

Original Communications.

IRREGULARITIES AND THEIR TREATMENT,*

BY T. COYSH.

MR. PRESIDENT AND GENTLEMEN,

Although my subject this evening is not the one upon which I had originally intended to read a paper, yet I feel, that considering the importance of my present subject to us as dentists, the change I have made needs little or no apology from me. In no part of our work is the skill, patience and ingenuity of the operator more taxed, and no part is likely to bring him more credit, if successfully accomplished.

Irregularities of the teeth may, besides spoiling the beauty and marring the expression of a face, give rise to inability to speak clearly or distinctly, or to masticate the food properly. This last is a point, which, in a young and growing child is of the utmost importance, for, imperfect mastication is necessarily associated with indigestion and consequent imperfect nutrition, and thus the physical well-being of the child is injuriously affected. Again, the crowded state of the teeth which we usually find in cases of irregularity, is directly favourable to the inroads of caries.

If then, by our treatment, we succeed in improving or correcting a deformity, in improving speech and mastication, or in reducing the liability to caries, we have the personal satisfaction of having accomplished sound and good work, and in the improvement in our patients we have a most valuable and at the same time a perfectly legitimate advertisement of our professional skill and care.

Therefore, whilst we are students here, we ought to make the most of our opportunities of treating cases ourselves, of watching the treatment of other students' cases and of profiting by the advice and experience of members of our staff, and thus try to attain to as great a degree of proficiency in the treatment of irregularities as we try to attain in other branches of our work. It is greatly to our interest to do so, both from the point of view of passing our examinations and from that of our professional reputation when in private practice. We shall then be called upon to undertake cases of almost any character, and if we are not skilful enough to obtain a good result, our reputation must suffer. Besides, the practice in impression taking is valuable, and the fitting to the mouth and bite, and fixing of regulating plates, must serve to some extent, as practice in fitting artificial dentures. Irregularities of the temporary teeth are of little importance and are never treated, and it is of irregularities in position alone of the permanent teeth that I propose to speak.

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* Read at the Students' Society of the Dental Hospital of London, Jan. 19, 1891.

The normal arrangement of the teeth is upon a semi-elliptical curve, which is slightly flattened in the incisor region and slightly prominent at the canines, on account of the larger size of those teeth The teeth should be situated upon such a curve, in their respective and regular positions, any deviation from this constituting an irregularity.

Irregularities are either those of individual teeth, or those of the normal size and shape of the jaws and alveolar processes thus causing irregularities of the teeth ; and we may get both varieties combined in the same case. They are classed as hereditary or congenital, and acquired or accidental, congenital irregularity being the result of causes acting before birth or before the eruption of the teeth, whereas acquired irregularity is the result of causes acting at the same time as, or after eruption.

The causes which may produce irregularities are numerous, but I think it will be well to briefly consider some of them, for if the cause be properly understood, the chance of a successful result can be more certainly diagnosed, and the plan of operative treatment more easily decided upon.

Civilisation is undoubtedly one great cause ; for researches by Coleman and others go to shew that ancient barbarians had very perfectly shaped dental arches, but as we all know, such are now the exception rather than the rule. In fact, the higher the type of individual, the more imperfect are the teeth and jaws, generally speaking ; and this is naturally the case, for as the teeth and jaws become less and less necessary to existence, a deterioration in their development and structure is to be looked for. Inheritance is another cause, and this natural law operates very powerfully in producing deformities of the jaws and also of the shape and positions of the teeth, family and parental peculiarities being probably more marked in the jaws and teeth than elsewhere in the body. Hence a child may have peculiarities in one jaw resembling those of the father, whilst those in the other jaw resemble those of the mother; or it may resemble one parent in its maxillary, and the other in its dental peculiarities, Lack of harmony in size between the jaws themselves, or between the jaws and alveolar processes and teeth, all result in irregularities; and thus in new countries where there is much inter-marriage between different nationalities and types, irregularities are very common.

The crypts of the permanent teeth are arranged in the jaws in a very irregular position, and if the development of the jaws is checked, *e.g.*, by a severe illness (which, according to Tomes, interferes with the development of the jaws rather than with the rate of development of the teeth) there is certain to be irregularity, probably of the canines.

The fact that the upper jaw is more often imperfectly developed than the lower, is due to the fact that its growth is checked by its articulations with the bones of the face, and being fixed and immovable it lacks any stimulus to growth that movement might give.

Excessive, or insufficient growth of the ascending ramus, and at the angle of the lower jaw, cause great deformities, viz., protrusion of the lower jaw, and protrusion of the upper jaw, and failure of the anterior occlusion, respectively. The above causes relate mainly to congenital deformities, and of these the most common forms are the contracted and the stunted upper jaws, resulting in protrusion of the upper and lower jaws respectively; and various peculiarities in position of individual teeth. In diagnosing, it must not be forgotten that a congenital deformity may be complicated by the presence of a further acquired deformity.

Among the causes of acquired irregularities may be mentioned too early extraction and too long retention of temporary teeth, the presence of supernumerary or supplemental teeth, accidents, and bad habits, such as thumb-sucking, lip-sucking and mouth-breathing.

The acquired V-shaped maxilla is a very common form, and it is variously accounted for by different authors. Tomes attributes it to enlarged tonsils, owing to which the patient is unable to breathe through the nose. The mouth being thus kept constantly open, lateral pressure is exerted upon the jaws by the tension of the cheeks, and the V-shape is gradually produced. Cartwright attributes it to high breeding, Oakley Coles to early ossification of sutures, and Kingsley to derangement of the fifth nerve owing to too much mental and not enough physical exercise during the developmental period, whereby nutrition is interfered with.

It is also attributed to the permanent canines coming down early, and pressing the anterior teeth forward and the side teeth inward. If the second bicuspid is not erupted at this stage, the first one is crowded back, and when the second bicuspid erupts, if it had already an inward tendency, it becomes crowded inside the arch, carrying the first bicuspid and molar with it to some extent, thus producing the saddle-shaped jaw.

The deformity produced by thumb-sucking is very characteristic. The lower front teeth are shortened, and the anterior curve flattened. and the upper front teeth are lengthened, protruded and separated from each other. The habit also seems to have a tendency to reduce the growth of the jaw at the angles, thus leading to failure of the anterior occlusion, or to the lower jaw biting one tooth behind its normal position.

The distinction between the congenital and the acquired V-shaped maxilla is that in the one case the body of the jaw is involved, and in the other only the alveolar processes. (Diagrams A and B.) Distinction should also be made between the V-shaped and

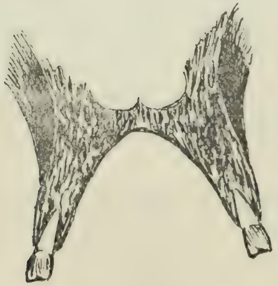

Diagram A.

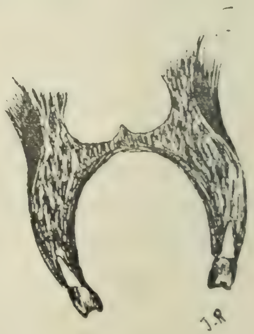

Diagram B.

the saddle-shaped maxilla (Diagrams C and D.) In the V shaped the teeth are arranged on two straight lines which converge anteriorly at an acute angle, so that we get more or less of the mesial surfaces of the central teeth presented to us. In the saddle-shaped, there is no acute angle in front, the teeth there often being well placed, the contraction being only in the bicuspid region. The treatment of the two types is different, for in the V-shaped jaw it is not necessary to extract before expanding, whereas in a saddle-shaped it is impossible to expand without first extracting the instanding bicuspid, the position of which when pressure is exerted from within resembles that of the keystone of an arch. I say this because Tomes in his "Dental Surgery" illustrates a very typical case of a saddle-shaped jaw, but describes it as a V-shaped.

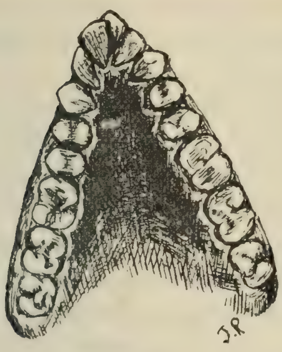

Diagram C.

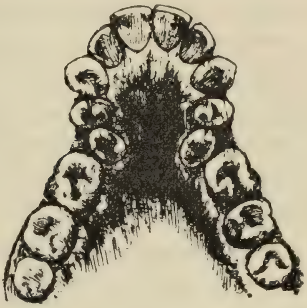

Diagram D.

There is a proverb that "prevention is better than cure," and it applies very forcibly to irregularities. For this reason, children and their parents should be warned against habits such as thumb-sucking, which produce irregularities. In some cases of threatened irregularity, the timely extraction of interfering temporary teeth is enough to ward off the danger ; if possible, therefore, children should be kept under professional supervision during the period of eruption, and then when an irregularity can be foreseen and treated by extraction, I think it is better practice to do so, than to wait and use mechanical treatment afterwards.

A very good example of such a preventive method is in a case where the canines are erupting early, and either pressing the laterals out of place, or leaving no room for the bicuspids, thus threatening a V-shaped or saddle-shaped maxilla. Such a condition is well treated by removing the first temporary molars, and then with a thin-bladed forceps also removing the developing first bicuspids. Room will be thus given all round, and the possibility of a large and permanent separation between any of the teeth reduced to a minimum.

Mr. May, in the paper he read a few months ago, dealt very fully with the much discussed six year-old molar question, so I shall not enter upon that to-night ; but the condition of these teeth as to caries must be considered before performing such an operation as I have suggested.

An operation which must rarely be done, is the extraction of temporary canines to make room for the permanent laterals. Growth of the jaw, particularly in the lower, will generally provide sufficient room for the laterals to fall into place without any treatment. Besides, the pressure of the crowded teeth stimulates growth of the jaw, and if we extract too soon this stimulus is removed, growth is retarded, and eventually the canine is crowded out, a result also helped by the posterior teeth working forward. A very simple irregularity of the laterals is thus converted into a very serious one of the canines.

The second temporary molar should be kept as long as possible, so as to prevent the six-year molar working forwards and crowding the anterior teeth. Loose temporary stumps should always be removed.

It is rarely necessary to remove any of the six front teeth of the permanent set in the upper jaw, but if such extractions do become necessary, they must almost invariably be symmetrical, or the centre of the mouth will be interfered with. This particularly applies to the centrals, for if one only is extracted, as is sometimes done in cases of fracture, the remaining one is usually very unsightly and conspicuous. The lower incisors are so much alike that one is rarely missed, and so we may, without hesitation, extract one in a crowded mouth, the condition of which would be improved by the operation.

If a point arises as to the relative desirability of extracting the upper lateral or canine, the question of sex must decide us, other things being equal. The laterals should be saved in girls for æsthetic considerations, whereas in boys the canine should be saved. The canines should always be kept if possible, for they give character to the mouth and are very stable teeth.

In deciding which of the teeth posterior to the six front teeth should be extracted, the general rule is, if all the teeth are sound, to extract the tooth which is nearest to the deformity and will leave us the least work to be done afterwards ; but a carious tooth should almost always be extracted in preference to a sound one, even at the cost of more extended mechanical treatment.

The great objections to removal of the six-year-old molars for irregularities are :—first, the more extended mechanical treatment which becomes necessary ; second, if the anterior teeth have to be drawn back, the twelve-year molars, already weakened in front by the extraction, may be tilted or pulled forwards instead of the other teeth being pulled backwards, and thus space be lost ; and third, the articulation is almost always disorganised.

The articulation must always be considered before extracting, for in many cases the way a tooth meets its opponents entirely decides the question of its removal. Thus, a tooth which articulates badly or has no opponent should be removed in preference to a tooth which is better situated in this respect, and the eventual result of our treatment upon the articulation must also be considered before finally deciding which tooth to extract.

In the mechanical treatment we have to cope with great difficulties. We cannot control our patients' actions, or ensure that our directions are being properly carried out. We have to move delicate organs implanted in a dense tissue, in which we have to promote absorption and redeposition under the stimulus of pressure ; and, even when mechanical treatment is completed, we are confronted by what is often the greatest difficulty of all—retention of the teeth in their new positions.

The earlier a case is operated upon the easier the work of moving the teeth will be, for immediately after eruption of a tooth its root is not fully developed, and the alveoli are large, so that a greater range of movement can be obtained than is possible later on. In any but simple cases, it is, however, better to wait until the twelve-year molars are fully erupted, for then all the teeth will be in position, the diagnosis is clearer, and there will be plenty of anchorage for apparatus. Moreover, at that age the bony system is being actively developed, and nutrition is at its height, so that the tissues are better able to bear interference.

It so happens that it is also a critical period in a child's life, on account of the many organic changes then taking place, so if the general health is unsatisfactory we must postpone operating, for a child's health might be permanently injured by a long and severe course of treatment when physically unable to bear it. At the same time, we must remember, that as time goes on treatment becomes more difficult and the result more uncertain.

Many simple cases, such as inversion of an incisor, or where the front teeth are biting edge to edge and spoiling their appearance, should be treated as soon as the offending teeth are fully erupted.

The front teeth are often cut in very irregular positions, as one might expect, knowing the mixed up way in which the crypts are placed in the jaws, and many hopeless looking cases of this sort correct themselves as the jaws grow, without any aid beyond the timely extraction of interfering temporary teeth. Such cases when recognised, should of course be left to themselves.

When a patient is brought for advice, if the treatment is not at once obvious, we should make a most careful study of the case both in the mouth and on models. The study of the case on the models may be helped by Kingsley's plan of cutting off the plaster teeth and replacing them in a new position, to see if an idea is practicable.

It is not so important to undertake a difficult case for the sake of appearance only in a boy, as in a girl, for in after life a man's beard and moustache will more or less effectually conceal a deformity, whereas in a girl, such a deformity may only become more and more obvious as time goes on. Children are usually first brought to us for advice on account of the defect in appearance, but faulty articulation and mastication, and a crowded state of the teeth predisposing to caries, are even more important, and are conditions of equal weight in both sexes as to the advisability of operation.

The teeth must be carefully examined for caries, for upon this the question of extraction usually rests, but the age and sex, and the lateness or otherwise of the eruption of the teeth also have an important bearing upon this point. The family type of face and how our proposed treatment will affect it in our patient must be considered, and family history is important, for by its aid the question of the congenital or acquired origin of the irregularity can often be settled. Practically, the movement of which the crown of a tooth is capable under pressure, is around a portion of the surface of a globe of which the apex of the root is the centre. Thus the direction of the root has to be made out before deciding that a tooth can be moved into a desired position.

I think that no case should be undertaken in response to the desire of the patient or his friends, unless we can see our way to a successful result, or at any rate a decided improvement, and here the fact that congenital cases and some particular types of deformity, *e.g.*, protrusion cases, are extremely difficulty to treat, must be remembered. An equally important matter is the entire consent to, and co-operation of the patient and his friends in, our line of treatment, for without this little can be done, and our work will only end in failure and disappointment. I shall not attempt to give any rules for the treatment of individual cases, for I believe that experience alone can help us in this, when once the broad principles laid down in the text-books have been mastered. It is impossible to say that a certain plan of treatment is right for every case of a certain type, for details vary and conditions differ in nearly every mouth. I would therefore, advise students to make pretty full notes of cases they treat, both of the treatment adopted, with reasons for it, and as to the appliances used and the results gained, and the time taken. Models before and after treatment, and during different stages of it, should be taken, and any teeth extracted should be cast in them, so that no question can arise, as I have known to happen, as to which tooth has been extracted. These models are necessary for reference during the progress of a case, and the first ones should be most carefully preserved, for they are convincing witnesses, if, as sometimes unfortunately occurs, a dispute should take place as to the success of our treatment.

Such notes and models which embody our own experience, will teach us more about the details of regulation work than could be learnt in any other way. I shall now turn to the important subjects of mechanical treatment and the construction of apparatus.

A regulation plate must always fit perfectly, and to obtain this result, I believe it to be necessary to always vulcanise on the first model, upon which it is generally advisable to trim the necks of the teeth to insure a good grip. For difficult cases, gutta-percha and plaster of Paris are recommended as impression materials, but I have had no personal experience in their use. A plate should be light, strong and simple, but not at the sacrifice of efficiency ; it ought not to injure the gums or teeth, and should interfere as little as possible with mastication and speech especially when the child is at school, and no plate should be so constructed that the patient or his friends cannot remove and replace it. I cannot insist too strongly upon this, for otherwise, without daily visits to the dentist, the plate and teeth cannot be kept clean, and such an amount of caries may be induced that the last state of the mouth is worse than the first. Regulation plates should be removed, and they and the teeth thoroughly cleansed at least once a day ; besides this, an antiseptic and deodorant mouth-wash, such as a weak solution of permanganate of potash should be used after meals.

It is generally necessary to cap the back teeth at some stage or other of our treatment, but as this is more or less uncomfortable to the patient and may cause considerable disturbance of the bite, it should be avoided when possible. Cases of moving the front teeth can often be done without it, for the discomfort caused by the moving teeth meeting those in the other jaw, will be sufficient to prevent the patient neutralising our efforts by his bite. In making cap plates however, it should be a matter of routine to take upper and lower models and make the capping articulate perfectly with the bite, for we can thus easily give good masticating power and steady fit to the plate, and in the resulting comfort to the patient we have gone a long way toward obtaining his confidence, which is half the battle in regulation work.

Force is most advantageously applied to a tooth near its tip, and in a direction at about a right angle to its long axis. And as the outer plate of the alveolus is thinner and absorbed more readily than the inner (except in the bicuspid and molar region in the lower), a tooth yields more readily outwards. Our force must be continuous and steady and not too strong, particularly in older patients. If we get pain we are exceeding the limit of health, and inflammation is taking place and the process of absorption interfered with. There is usually tenderness of the teeth, which may be treated by painting the gums with tincture of iodine and camphorated spirits of wine, equal parts. Sponginess of the gums under treatment must be treated locally by astringents, such as tannin and glycerin.

The point of delivery of the force must be a fixed one, and the resistance there must be greater than that of the teeth we are trying to move, or we shall get an opposite effect to what we expect If possible, the point of reception of the force upon the tooth should also be a fixed one, and this may be obtained by fixing small collars round the tooth, to which hooks may be soldered to hold ligatures or elastics ; or holes may be drilled into them for the reception of the ends of springs. A collar may be easily made by burnishing a strip of thick platinum foil to fit round tooth, and then strengthening this by melting solder on to it.

The forces at our disposal are :—Screws, wedges, inclined planes, levers and elasticity of metals and rubber.

Mr. Kingsley speaks very highly of jack screws for expansion and other purposes, but I must refer you to his work on oral deformities for descriptions of cases.

Wedges are very useful at times, but when used as compressed wood in conjunction with plates, the difficulty of applying them is too great to allow of their frequent use. Inclined planes are little used now, and levers are generally used in conjunction with elasticity.

Pegs are very generally used, but it seems to me that for any but the most simple cases, their action is most inefficient and unscientific. It depends upon their being left long at the offending tooth, and a certain degree of misfit of the plate thus produced. By the force of mastication the plate is gradually bitten into position, and thus the tooth driven out. Thus, for pegs to act the back teeth must be capped, the plate must not fit right home, the discomfort to the patient is not inconsiderable, and the force is necessarily intermittent ; as that deposition of bone takes place but slowly, and we find that a tooth regulated thus, takes a long time to become firm in its socket after treatment is completed.

Elasticity is the most useful force we have, and its applications are practically without limit. Elastic rings are very useful for pulling back out-standing teeth, or pulling out in-standing teeth, but they must never be used unless secured to a plate or to collars on the teeth, for they have a great tendency to slip up towards the neck of a tooth and, if not secured, they may work down the root and cause loosening and possible loss. I have an arrangement of elastics here which acted very well, and which the patient easily manipulated by himself after a few lessons, but unless the patient or friends were rather intelligent, I should not like to leave such an apparatus to their care, although it will be seen to be very simple upon examination. (Fig. 1.)

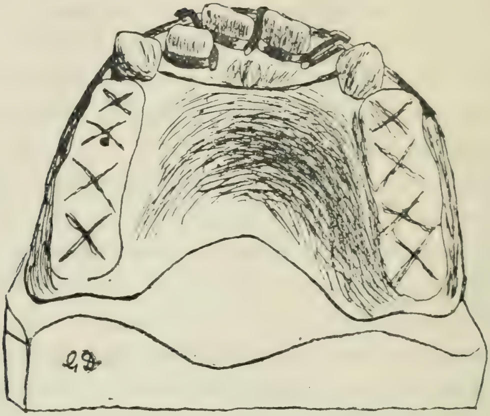

Fig. 1.

When used for retracting upper front teeth, they are well applied from a point high up in the palate to the tips of the teeth, to which they may be secured by hooks soldered upon small gold tips, struck up to fit and fixed with osteo. With this arrangement, a decided amount of shortening is obtained which is always needed in these retraction cases. For the loan of the models and apparatus illustrating this plan I am indebted to Mr. E. Gardener. (Fig. 2.)

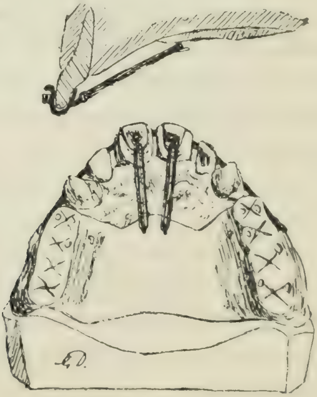

Fig. 2.

The action of elastics must be carefully watched, for they sometimes have a different effect to what we expected, owing to an action which did not appear at the time we adjusted them.

Platinised gold and steel pianoforte wire are the most frequently used metals for springs, and of these, piano wire is most generally used, for it is light, strong, extremely elastic, and, a matter of some importance to students, quite inexpensive. I generally tin these springs of piano wire throughout all their length before vulcanising, so as to prevent that oxidation which takes place in the vulcaniser, and often causes breakage at critical times. If the tinning be quickly and carefully done, the temper is not materially affected, the following being the method I adopt. After cleaning the wire thoroughly, it is dipped into chloride of zinc solution, and then for an instant into melted tin, which must not be hot, and the surface of which must be quite clear. Upon removal from this, the surplus molten tin is quickly shaken off and the spring cooled in clean water. The greatest advantage of the springiness of piano wire is only obtained after bending a turn or two in it, as in the Coffin spring and the Talbot coil spring. Pressure, traction and torsion can all be readily performed by their aid. For pressing out teeth, coil springs are very effective, the only difficulty attending their use being a tendency to slip off the sloping surfaces of the front teeth. If the plate fit well and steadily, and the spring be carefully adjusted as follows, little trouble will be experienced. The points to be observed are :—1st, not to have thick wire, or we shall get a push instead of elasticity ; 2nd, to have all the turns rounded and never bent at a sharp angle ; and 3rd, to have the coil or turn in the wire which gives the spring, and the direction of the force required in the same, or at any rate in parallel planes ; so that when the coil is tightened, the end of the spring still acts along the same plane as before. This case (Fig. 3) illustrates this on the left side, but on the right side it is purposely arranged wrongly, and there, if the coil were tightened, the wire would slip up and off the teeth. Also notice that the movable end of the spring comes off beneath the coil, which thus

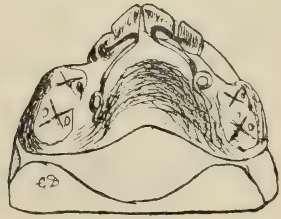

Fig. 3.

helps to prevent slipping. The bend in the wire immediately before it acts upon the tooth is of great advantage, for by simply opening or closing this, any required side to side movement can be given. A small bridge of piano wire under which the spring may play is another method of preventing slipping ; or if a gold collar be fitted upon the tooth the end of the spring may play into a small hole drilled into this or upon the tooth beneath the collar. These (Figs. 4 and 5) cases illustrate these points, and No. 5 also shews traction outwards.

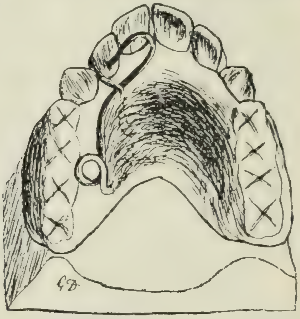

Fig. 4.

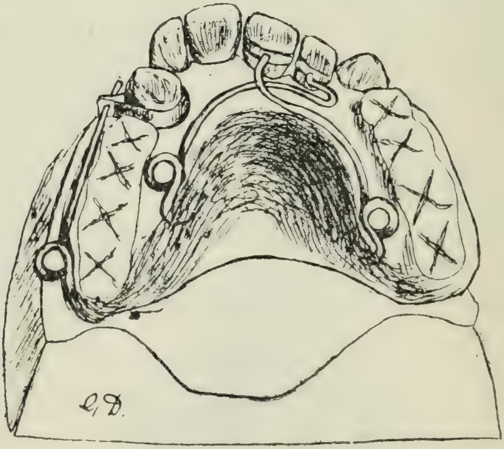

Fig. 5.

This method is useful where a steady hold cannot be obtained from inside, *e.g.*, upon a canine. I may mention that the thin metal collar upon the canine in this case was cut from one of Parmly Brown's polishing strips. I believe it is German silver, at any rate it is very strong and kept its colour in the mouth very well in the cases in which I used it, which, however, were not very lengthened ones. I have another illustrative case (Fig. 6), and a number of plates kindly lent me by Mr. Lawrence Read, which I pass round for inspection. Thus it will be seen that the coil spring is capable of very extended application. The Coffin spring is most useful for expansion and for the following hints as to its form and position when used in these cases, I am indebted to Mr. Lawrence Read.

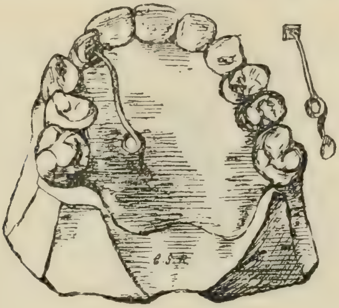

Fig. 6.

It must be flat from side to side, and not contoured to the palate and must work upon a flat surface of vulcanite, which must be built up behind it, thus also preventing accumulations of food. Before putting the springs in the wax, the turns should be tied together by binding wire (which also helps to hold the spring in the plaster), so that after the plate is completed and divided, a good spring is immediately obtained on removing the binding wire. The wire again must not be too thick, or springiness is lost. In expanding the arch bodily, the spring must be placed across it, in a direction more or less parallel with the roots of the bicuspids whereas for expansion of the anterior region, it should be placed more transverse to this direction and more parallel to the contour of the palate. (Diagram E.) The turns in the wire must be parallel to each other. I have found springs made in this manner work admirably, and there is no such liability to cause misfit on opening the spring,as is met with if it is curved

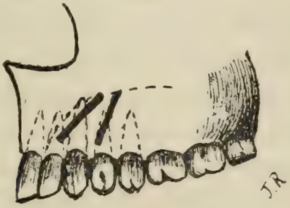

Diagram E.

and contoured to the palate. Fig. 7 shows spring tied and ready for vulcanising. The advantages of the use of springs for regulation work may be summed up as follows :—1st, their wide application, and their effectiveness ; 2nd, their steady and constant pressure ; 3rd, the plate being necessarily a steady fit the patient is more comfortable ; 4th, such plates can be easily taken in and out for cleansing purposes ; and 5th, they are little or no trouble to adjust when once fitted.

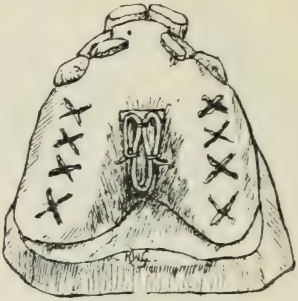

Fig. 7.

In case of fracture of a spring, a new one may often be ligatured to a plate and thus loss of time avoided. Another plan by which making a new plate may be avoided for a time if desired, after forcing teeth outwards, is by building up hard gutta-percha on to the plate and up to the backs of the teeth that have been moved.

Of special operations for the treatment of irregularities, I need only mention (1st) immediate torsion and (2nd) letting down the bite by grinding the teeth in cases of failure of the anterior occlusion.

Immediate torsion is seldom advisable when other means can be adopted, for the danger of death of the pulp and loss of the teeth is great. It should rarely be attempted on any other teeth than the upper centrals, for those are the only teeth whose roots are round enough to give a fair chance of success, though it has been performed without accident on laterals and even canines. Patients should be young, and the mouth clean and healthy, for obvious reasons.

These models, lent by Mr. Colyer, show a case where the bite was let down by grinding, and a very good result obtained. This case was described and illustrated in the DENTAL RECORD of March, 1890.

The question of retention after treatment, is a most important one, and no time or trouble must be spared to secure a perfectly fitting retaining plate, for if that is inefficient, our previous work is wasted. In some cases the articulation alone will be sufficient, and it should always be made to assist if possible. The time necessary for a retaining plate to be worn varies from three months to as much as two years. The number of teeth moved does not make a proportionate difference to the time necessary for retention, for bone is deposited as quickly in one part of the mouth as in another. Those cases which need the longest time are :—Protrusion cases of the upper jaw, for in these the bite is all against retention ; and torsion cases. Such have to have the teeth supported upon both labial and lingual surfaces or the deformity will recur. A retaining plate which is to be worn for a long time should obviously not cap the back teeth.

A very convenient retainer for one or more twisted or retracted teeth, may be made by fitting gold collars to the teeth that have been moved, soldering them together, and staying them on adjacent firm teeth by small projections (Fig. 8.)

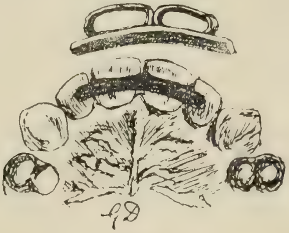

Fig. 8.

After inserting a retention plate, the case must be closely watched for the first few days to see that no change takes place, and after that, if all is going well, at longer and longer intervals. Consent to its removal should never be given until we are certain that it is safe to do so. The consequences of premature removal must be impressed on the patient, and all responsibility disclaimed if done without our consent.

This, Mr. President and gentlemen, brings me to the close of my paper, and though a long one, I feel that it has done but scant justice to so important a subject, in fact, I have had great difficulty in keeping it within reasonable limits. I have to thank the several gentlemen who have lent me models and apparatus, and Mr. Breese for drawing my diagrams. In conclusion, I thank you for your patient hearing, and trust that we shall have as good a discussion as the subject of Irregularities undoubtedly deserves.

The Figures and Diagrams have been reproduced from pen-and-ink drawings kindly made for me by Messrs. Dalton, Royston, Reed, and Gillett.

HISTOLOGY OF THE TEETH OF MESOPLODON LAYARDI.*

By G. W. Watson, L.D.S.

Professor Sir William Turner asked me to try my hand at taking some micro-photographs of sections of the teeth of this rare whale, which I very willingly did, and it enables me to bring before your notice the structure of the teeth of this interesting and unique animal. Three specimens of Mesoplodon Layardi were brought home by the "Challenger" expedition, and were handed over to Sir William Turner for description. In June, 1879, he read a paper before the Royal Society descriptive of the structure and arrangement of the teeth of this cetacean. Layard's whale, though very rare now, seems to have been pretty common at one time, numerous fossilised fragments of its beaked jaws having been obtained from the Red Cray, Norfolk. Their common characters are long narrow beak-like jaws, and prominent elevated heads (hence the name bottle-headed whale), and they range from fifteen to thirty feet in length.

In the upper jaw there are no teeth present. Quoting from Professor Sir William Turner's description :—In the lower jaw, at the junction of the symphysis with the body, two teeth protrude from their sockets (as will be seen on diagram). Each tooth consists of a triangular denticle proper, and a strap-shaped shaft: the shaft, laterally compressed as it emerges from the socket, curves obliquely backwards, upwards and inwards, so that its inner concave surface is in relation to the side and dorsum of the beak. As the summit of each tooth reaches the opposite side of middle line, the two teeth cross each other on the dorsum of the beak, and from the polished appearance of the anterior and inner surface of each shaft, it is evident that they must have rubbed against each other, or against the beak in the act of opening the jaw. The total length of tooth, 14 inches, 6½ inches of which is imbedded in socket of jaw. In the young whale little more than the denticle proper protrudes through the gum. The denticle proper projects almost directly upwards from the outer edge of the upper end of the strap-shaped shaft, when it becomes continuous with the anterior border. It is triangular in shape, its base being ½ inch, while its diameter from apex to base was $\frac{3}{10}$ of an inch. The base rises abruptly from the shaft, and some irregular patches of glistening white enamel form its outer surface, but the enamel is not continued upwards to the apex of the tooth, which is composed of dentine. In the adult tooth the whole of it is solidified. In the young tooth, on the other hand, the pulp passes up through the shaft to the base of the denticle. The micro-photographs exhibit the appearance presented by a vertical section through the strap-shaped shaft of tooth. (See micro-photographs).

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* A Paper read before the Odonto-Chirurgical Society of Scotland.

Commencing at the outer layer, we find it is made up of a thick layer of cementum, has a distinctly laminated appearance, and contains numerous lacunæ and canaliculi ; next there is a granular layer, similar to what obtains in other mammalian teeth; the next layer is composed of vaso-dentine, the vascular canals running in the direction of the pulp, and inter-communicating with each other ; then comes a fringe of dentine with the tubules radiating towards the pulp, and lastly the calcified pulp made up of osteo dentine, or modified vaso-dentine. The curious arrangement of the tissues in the tooth of Mesoplodon makes it somewhat of a puzzle to comprehend the histo-genesis of their development, while the very unusual arrangement of the teeth in relation to the beak of the animal, limiting the action of the jaw and making them, one would think, functionally of no use to the animal.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

THE Ordinary Monthly Meeting of the above Society was held on the 2nd February, at 40, Leicester Square. The President, Mr. S. J. HUTCHINSON, M.R.C.S., L.D.S.Eng., in the chair and a large attendance of members. The minutes of the previous Meeting were read, amended and confirmed.

Mr. Vernon Knowles, Reading, Mr. C. A. Clarke, Forest Hill, and Mr. S. A. Coxon, Wisbech, were nominated ; and Dr. A. W. W. Baker, Dublin, Mr. T. W. Harris and Mr. H. L. Albert were elected members of the Society.

THE PRESIDENT, with the introductory remark that a search of the records of the Society for precedents, seemed to establish the fact that the President's opening address usually followed immediately upon the reading of the minutes, thereupon proceeded to deliver his

INAUGURAL ADDRESS,

of which the following is a condensed report. After a graceful allusion to the mingled feelings of pride and fear with which he accepted the honour and responsibility conferred upon him, he adverted to the fact that the Annual Meeting of the British Dental Association would this year be held in London, and passed on to welcome the newly established Metropolitan Branch of that Association, which might find ample field for the discussion of politics and ethics, and methods of practice; and which, if it followed on the lines and traditions of its parent and grandparent, might expect a successful and prosperous career. But Mr. Hutchinson felt it his duty, as the President of the Odontological Society, to express a strong hope that this Society would ever remain the centre of the scientific life and work of the profession; that its members who were also members of the Metropolitan Branch would reserve their scientific work for the Odontological Society, and that, as heretofore, papers and casual communications might be received from all parts of the Kingdom. It must always be a fact that this Society had the distinction of a *genius loci*, and while it attracted the picked men all over the country, it radiated their good work in equal proportion. Commenting on the museum, he held it to be of the utmost importance that its high standard of efficiency should be maintained, and trusted that the day was not far distant when the whole of the valuable store of specimens shown to exist by the marvellous display in Dublin in 1888, would find their way into the museum of the Odontological Society. He should then be prepared to advocate the transportation of selected duplicate specimens on loan to every city or town where the British Dental Association held its Annual Meeting. The risk of breakage or loss might be minimised by proper precautions, and he saw no reason why the example of those gracious people who lend pictures and other interesting valuables to exhibitions all over the Kingdom should not be emulated. Their library was a very good one, but he hoped that through the librarian the Council would be able to adopt the policy of obtaining a copy of every single work on dental matters produced throughout the civilized world in an orthodox manner. Touching upon the subject of specialism in scientific work, he would define it as the result attained by a liberal education being brought to bear upon the experience gained by constant practice of some department of study for which the individual has a natural or acquired aptitude. In other words, when a man has gone through a course of general study, he finds probably that the bent of his mind leads him to pay more attention to one subject than another, and it is obvious that if he works at this subject steadily, collects evidence of what has been done, takes every opportunity of repeating these experiences and of dealing with the matter in his own way, surely the aggregation of these data must result in his being able to deal with, and if necessary, to treat cases which fall within the scope of his training. As time went on specialism, he believed, would cease to be a term of reproach, and would become the ambition of many earnest students in all branches of science. Darwin said: "It seems to me that an hypothesis is developed into a theory solely by explaining an ample lot of facts!" Might it not be added that theories become facts by the accumulation of instances in which theories are verified by their constant repetition in exact analogy—and was not specialism the natural sequence?

Reviewing the past year or two, it was interesting to note the evidences of activity and of progress. In literature, new books and new editions were numerous. In practical work much had been done, and it was remarkable that efforts had been chiefly directed to the alleviation of pain; fruitful and instructive discussions on anæsthetics had taken place and had included as subjects, gas and oxygen, bromide of ethyl, and cocaine. Successful experiments in hypnotism for the painless extraction of teeth had also been made, but the President desired to express his personal opinion that it was a method which should be employed—if employed at all—under the most stringent conditions and with the greatest care. He witnessed in Birmingham some very interesting and convincing experiments as to the possibility of reducing patients to the hypnotic condition, but the impressions they conveyed were those of humiliation and extreme pity for the debased condition of the subjects whilst in the hypnotic sleep. The conclusion he had arrived at after a very careful observation, was that mesmeric power could only be exercised by individuals upon a really small percentage of patients, so that its application would not be of any universal service, and there remained the question, what would be the future condition of the patients who thus allowed their mental state to be abrogated at the power of a stronger will? While not for a moment denying the potency of hypnotism, he maintained most earnestly that even if its effects might possibly be salutary in a few isolated cases, the state should only be produced in the presence and with the full sanction of a medical man, as well as that of the patient. He still more strongly doubted the justifiability of its use in dental operations. He desired to emphasize his faith in nitrous oxide, believing as he did that when pure and administered skilfully it supplied the safest and most legitimate means of sparing patients the shock of painful operations, and with ether of course its effects were prolonged. For the most serious of prolonged dental operations, they had an auxiliary in chloroform, which could not be altogether dispensed with, but should be appealed to only as a *dernier ressort.* An attempt was being made to revive the use of Faradic electricity for securing painless extraction, but at present experiments were in too crude a state to admit of recognition, In the earlier use of this agent the current was passed entirely through the forceps to the teeth, whereas the more recent method required that the patient should hold the terminals of the battery in each hand, while a third wire attached to the handle of the forceps diverts a portion only of the current through the tooth to be extracted, the circuit only being completed at the moment of extraction.

The President then referred to the enormous strides which had been made in the preparation of roots of teeth for carrying artificial substitutes. A more scientific knowledge of the power of antiseptic agents had rendered it possible to make healthy the roots of teeth which a few years ago would have been condemned as useless ; but he wished to call attention to a book by M. de Chamont, which depicted a denture carrying ten artificial teeth on a narrow plate, adapted and fixed by four pins fastened in the roots of four teeth. "Truly," remarked Mr. Hutchinson, "there is nothing new under the sun." It was cheering to watch the efforts which were being made to produce fillings and inlays which shall imitate the natural colour and consistence of the natural teeth, rather than disfigure them by extensive displays of gold ; and the inlays of ivory, of porcelain and of glass, seemed to indicate that in the near future a most natural, lasting and artistic means of treating extensive caries in incisors, canines and bicuspids would be obtained. So much had been well written on the progress of the knowledge and use of antiseptics in dental surgery, that it was unnecessary to refer in detail to the subject, but Mr. Hutchinson desired to invite attention to oxygen gas for the treatment of septic roots and of alveolar abscess; he had made a few experiments which seemed to indicate oxygen gas as an antisepticising agent of the greatest value in therapeutics. He found it possible to use the compressed oxygen now so easily obtainable, by fixing a small india-rubber tube to a small expansible net-covered bag at the outlet of the gas bottle, and slipping the india-rubber tube on to the nozzle of the injection needle of a hypodermic syringe. Abscesses and roots might thus be treated in a variety of ways. Turning to the question of dental education, the President quoted from a speech of the late Mr. Cartwright in 1856, favouring a liberal education and expressing the opinion "that any attempt to separate dental surgery from the profession of surgery is impolitic in the extreme."

Glancing over the records of this Society, the scientific and literary work done by its members afforded a justification for pride and a stimulus for carrying on the good work. There were many problems yet to be solved and ample scope for further research. Much was unknown as to the prevalence of caries during adolescence, its causes and treatment: the prophylaxis of caries was still far from being a scientific certainty. The direct and remote influence of nerve irritation and nerve sympathy caused by dental lesions, presented a wide field for enquiry. Little was known about the physiology of nerve sensation in tooth substance, and at present it was only possible to theorize as to the zone of pain at the point where the dentine joins the enamel. Profound ignorance prevailed as to the true function of the soft fibrils in dentine, and it was impossible to say with certainty whether any change or none, either of deposition or alteration, takes place in dentine after the complete formation of the tooth. Nor could the confession be avoided, that the exact *modus operandi* of such an apparently simple matter as the growth and eruption of a tooth was unknown. The possible relation of skin diseases with dental caries was a subject for observation, and the influence of dental disease on strumous glands required working out. Fresh explanations were being invented without explaining the true etiology of erosion, and to assert that the soft fibril of Tomes is a mass of protoplasm, possessing all the attributes of that organism in other parts of the body, was only to confess the utterness of one's impotence. Turning to practical work, a filling possessing the color and texture of a human tooth, which should be as lasting as gold and amalgam, had yet to be discovered ; and in the workroom no substance had been found possessing the beauty of so called continuous gum, which should be as easily worked as vulcanite. There remained a topic too controversial to discuss in a Presidential Address, viz., the proposed higher diploma in dental surgery, but personally Mr. Hutchinson would welcome the day when every qualified dental surgeon would regard membership of this Odontological Society as a higher diploma, to be obtained only as the result of some good and original work, and of probity in private and professional life.

Mr. STORER BENNETT, for Mr. MORTON SMALE, presented an upper model showing a supernumerary molar on each side, the situations of which he described.

Mr. W. J. ENGLAND, for Mr. HENRY SEWILL, read a communication on the etiology of empyema of the antrum. The conditions of empyema seemed to be little understood, and its causation was frequently overlooked by medical practitioners. The weight of evidence was mainly in favour of a dental origin. The pathological conditions of teeth were those causing direct septic infections, inflammation followed by gangrene of the pulp, or of that of one root of a molar, suppuration round the apex of a root leading to morbid changes in the root end. Cases were cited by Mr. Sewill in support of his views.

Mr. CHARTERS WHITE read a communication upon a new method of demonstrating the structure of dental and osseous tissues. The process advocated was described as follows :—The bone or tooth having been sectionised, is placed in ether for 24 hours, thence transferred to thin collodion, stained with fuchsine, to remain for three or four days ; the section is next put in 50 per cent. alcohol to harden the collodion; it is then ground down with ground glass, and powdered pumice in water, finishing off with ground glass and water to obviate the residual particles of pumice. By this plan the balsam is prevented from running into the spaces, which occurs in the ordinary method.

The PRESIDENT expressed the indebtedness of the Society to Mr. Charters White, for his instructive communication, and remarked upon the beauty of the specimens exhibited.

Mr. J. C. STOREY (Hull) exhibited some models, and described a case of compound fracture of the lower jaw of a lad, aged 12 at the time of the accident, when he was run over by a cab, some eight years ago. The central portion of the jaw from the right canine to the left first bicuspid was lost, and the fractured ends were united by fibrous tissue only.

Mr. HENRI WEISS (for Dr. J. ARKÖVY, of Buda-Pesth) read a paper on—

"READY CONTOURS AND CROWNS MADE OF AMALGAM."

The best writers and practitioners had adopted contour filling. Gold was maintained to be the best material for the purpose, and no doubt it was in general; but taking into account the various conditions of approximal cavities in premolars and molars, which more frequently want contouring than front teeth, it might be conceded that contour fillings of gold were very rarely indicated in back teeth; first, because of the invariable absence of wall strength; secondly, the proximity of the cervix; thirdly, the impossibility of control while annealing the first quarter of the gold. To these arguments might be added the effective, and for the case valuable, indication of combined fillings, where gold had to shelved as a non-combinable material in favour of amalgam. Providing, therefore, that amalgam could be used for shaping the lost part of the crown, apart from the saving of time, the foregoing reasons pointed to it as better than gold for contouring back teeth. These considerations had suggested to Dr. Arkovy the possibility of a ready made amalgam crown (or partial crown), being serviceable for the purpose. The premolars and molars which Dr. Arkövy had the pleasure of introducing to the profession, and which might be obtained of the dental depots, were made after natural teeth, and possess the precise morphological shape required for crown work, or, cut into segments, for contours. The directions for use were as follows:—(1) Take impression, and bite from the prepared tooth, and selecting the anatomically suitable amalgam crown, have it fitted in the laboratory to the model, somewhat lower than articulation requires. If one part of the crown is wanted, have it cut by a thin saw, and filed as required, then let the inner part be provided with retaining pits or deep under-cuts. Time hardens, and air has no deteriorating effect upon the crowns. (2.) When starting for stopping, put the crown or contour into chloroform, in order to get rid of any fat that might possibly adhere. The amalgam for the filling being prepared take a small quantity of it, to which add one small drop of mercury, and rub in with a polisher upon the surface furnished with under-cuts. Fill the amalgam into the cavity, with or without rubberdam to the level of the edges, covering them as well. Put the amalgam crown or contour upon the filling, push the piece with the fore-fingers several times, in the labio-lingual direction, until it attains its proper position. No hard pressure should be exerted on the contours, their body being too weak ; but entire crowns should be pressed firmly. Then polish, and, if the rubberdam is in use remove it *very carefully*. In order to keep the contour or crown in position, a small piece of letter paper should now be introduced between it and the approximal surface of the next tooth. For entire upper crowns it is advisable to cautiously drill through the crown fissure, for the amalgam filling will more easily keep it in place, and counteract its dropping before setting ensues. Special care should be taken to exclude moisture, to leave no space between the piece and tooth, and to save the work from unnecessary movement. After the lapse of four, preferably five, hours for setting, finishing may be effected with lava strips, drawn through the interspace upon the cervical part. Polish with circular brush dipped first into alcohol, and then in pumice-stone powder. Patients should be dissuaded from masticating on that side for two or three days. Any preparation of amalgam may be used, but if copper amalgam eight hours would be required for setting.

DR. J. F. W. SILK, M.D., read a paper entitled :—

"OBSERVATIONS ON BROMIDE OF ETHYL IN DENTAL SURGERY."

In America, on the Continent, and especially in Germany, the drug had been held in high repute by dental surgeons for some time past, but in this country there were no records of its systematic employment in a similar manner. At the outset, Dr. Silk wished to disclaim any advocacy of the indiscriminate use of the bromide· or any suggestion that it was an entirely satisfactory substitute for the other dental anæsthetics. He had endeavoured to impartially record his table of cases, and he desired to be equally impartial in his remarks, so that each might form his own opinion as to whether the drug was worthy of a more extended trial. Bromide of ethyl seemed first to have been used as an anæsthetic by Nunneley, of Leeds, in 1849, and again brought forward by him in 1865; some years later its use was advocated by Turnbull, and by Levis in America. For its introduction into dental work, Dr. Silk believed Schneider of Berlin, and Hertz of Vienna were responsible. As to its properties, without entering minutely into the subject, care should be taken that when bromide of ethyl ($C_2 H_5 Br$) was asked for, the chemist did not supply bromide of ethylene ($C_2 H_4 Br.$), the substitution of which had led to fatal results. Merck's preparation was almost universally used in Germany, and notwithstanding a leading English chemist's assurance of the purity of some English preparations, Dr. Silk strongly favoured Merck's. Variation in effect might be partly or even entirely due to the decomposition which the drug undergoes by keeping. As to the cost, where any number of administrations are undertaken, it might be said to be very little more than half the cost of nitrous oxide per patient. It would seem that robust and healthy males tolerate the drug better than weakly anæmic females, or children. The amount of the dose would vary, *inter alia*, with the method of administration, *e.g.*, in the first seven cases with the open or semi-open method ♏70 to ʒ3 were required. With the closed method ʒ iss had usually proved ample, and in many instances ʒ i had sufficed. He would be inclined to put the dose down at from ʒ i to ʒiss. Being not altogether satisfied with the inhaler used in the first seven cases, Dr. Silk adopted an ordinary Ormsby's inhaler, upon which the drug is poured through the face-piece on to the sponge, and it is then fitted to the face; little or no air is admitted for the first few inhalations, after which the cap of the airhole is slightly turned. The induction of anæsthesia with this inhaler averaged 66·8 seconds and the duration 46·2 seconds—half as long again as with nitrous oxide. The average of induction was based upon the observation of twenty, and the average of duration upon twenty-eight cases.

Roughly, the duration of the anæsthesia bears some relation to the time required for induction, but this is by no means absolute, and with the English preparations of the drug the variability is very marked. When the time from the commencement of the inhalation to the end of the anæsthesia exceeds two minutes, the after-effects are likely to be bad. The question, "How do you know where a proper degree of anæsthesia has been produced?" is not so simply answered as might seem. In Berlin some stress seemed to be laid upon the muscular relaxation, but Dr. Silk had not found this at all reliable. He generally removed the face-piece when the faintest stertor was heard, or if that were obviously due to accidental causes or unduly delayed, the commencing weakness of the pulse or the development of conjunctival insensibility were his guides. The stertor referred to is not the laryngeal stertor of nitrous oxide narcosis, but of a much lighter and regular kind, originating probably in the palate. During the course of the inhalation it would probably be found that the breathing becomes slightly slower and shallower, but in the majority of cases these changes are almost inappreciable. Dr. Silk had never been able to detect any irregularity in the rhythm, nor, as a general rule, had any cough, laryngeal spasm, or bronchial irritation been set up. These remarks apply only to the methods of dental anæsthesia, and were not applicable to the effects produced when the anæsthesia is prolonged for longer periods. There could be no doubt, in his opinion, that the cardio-vascular or circulatory system is much disturbed during the inhalation of bromide of ethyl. The primary flushing of the face is, he believed, a pretty constant phenomenon, though it might be but momentary in its duration ; this effect is very similar to that produced by nitrite of amyl, and might possibly be explained in the same way, *i.e.*, arterial dilatation with consequent fall of blood pressure. This fall might, no doubt, to a certain extent, in itself account for the diminution in force and increased frequency of the heart-beat as observed at the radial pulse. It was, however, highly probable that other factors are at work, for the flushing quickly succeeds a pallor and the heart's action tends to become more feeble, slower and irregular.

Dr. Silk thought upon the whole that his sphymographic tracings (exhibited) bore out the views he had put forward in respect to the effects of the bromide on the circulatory system, especially if it be remembered that the heart's action immediately before the inhalation is probably unduly accelerated by the nervous condition of the patient. One set of tracings he regarded as particularly interesting ; as indicating the rapidity with which the blood pressure, etc., is restored. This rapid recovery is, he thought, usual and is of great importance.

As to the effect of the drug upon the nervous system, and through it upon the muscular system, the exceedingly transient character of the stage of excitement was striking, in the majority of cases it had been almost inappreciable. This observation seemed to apply almost equally to the nervous woman, and the robust (and probably alcoholic) navvy. It might possibly serve as an indication for the class of cases in which the use of the drug is more particularly appropriate. Occasionally very slight spasm of the fingers, or rhythmic movement of the limbs, etc., were exhibited, but Dr. Silk had never observed anything like the degree of spasm and movement which often accompanies nitrous oxide or ether. In respect to other phenomena he had not much to say. The pupils tend to dilate. Increase in the salivary secretions was sufficiently marked in four cases to attract attention, but never so copious as with ether. In some few instances, patients would make a groaning noise from the beginning of the inhalation, but this had always been ignored and did not either delay or shorten the narcosis. The anæsthesia which had resulted from the use of the drug, had, to Dr. Silk's mind, always been quite satisfactory both in degree and in kind.

After-effects might be divided into immediate and remote: of the former Dr. Silk had definite notes in thirty-nine instances. In eleven, a certain amount of hysteria resulted ; in ten others, more or less depression or prostration occurred. In one, actual fainting ensued, but the patient was subject to what she termed "fainting fits." Actual sickness was noted in two cases, and in seven others nausea was complained of. Slight and transient degrees of exhilaration were developed in three instances, and in many cases a certain amount of confusion of the intellect had remained for some few minutes. By the use of printed post-cards, rough estimates of remote effects had been obtained in forty-five instances. Of these forty-five, in no fewer than twenty-nine the return was to the effect that the patients were perfectly well on their return home, and for the remainder of the day. Prostration or depression was noted in five instances, vomiting in two, and headache in three. In one case the return was "ill all day," but the nature of the illness Dr. Silk was not able to ascertain, possibly it might have been simple hysteria. Of the remaining five cases, dizziness, drowsiness, and other very trivial and doubtful complaints were recorded. As to the relation between immediate and remote effects, from seventeen tabulated observations of both, it was gathered that the importance and severity of the remote symptoms were tolerably proportionate with the immediate after-effects. Thus simple hysteria had seldom been followed by anything worse, while on the other hand, nausea might be followed by sickness, or the sickness might be prolonged. This somewhat negative evidence was of importance, for it enabled Dr. Silk to say, so far as his own limited experience was concerned, that he had never met with a case in which serious symptoms had developed upwards of twelve hours after the bromide had been inhaled. Such cases had, however, been described. With reference to the death-rate and dangers of bromide of ethyl, while aware of the importance of the point he could not help thinking that the fatalities which had been hitherto recorded rather tended to exaggerate the danger of the drug when used in dental surgery in the way he had described.

Discussion on Dr. Silk's Paper.

The President said that in order to bring the discussion within satisfactory limits, he would ask those anæsthetists present to give their views first; he would then be glad to hear the experience of dental operators who had used the drug.

Mr. Woodhouse Braine wished at the commencement to say that he had never seen the anæsthetic administered, but he had very carefully gone through the paper, of which Dr. Silk had kindly sent him a copy, and he confessed that he was not satisfied with the results. It seemed to him that in a very large number of cases, the heart seemed to be failing, and up to the present there had been a certain number of deaths. Mr. Braine was of opinion that all that bromide of ethyl would accomplish could be done with chloroform, that the risk to life was equally great with the former as with the latter, a risk which did not exist with gas and ether. There would be a general feeling of indebtedness to Dr. Silk for having tried the drug, but it was no new thing, it appeared in 1849 and then disappeared; it was again brought forward some fifteen years later and again abandoned; then it was tried in America. So that it had had two or three trials, and Mr. Braine thought that anything which could not hold its own after three trials was not worth much.

Mr. Bailey said that Mr. Clover tried the bromide some years ago but was not satisfied with it. One of the objections to it was that it is liable to decomposition. Mr. Bailey in a post-graduate lecture a fortnight previously had said that while bromide of ethyl gave rapid anæsthesia, was pleasant to take, and was exhilarating, it had no advantages over nitrous oxide. After quoting an opinion from the *Lancet*, Mr. Bailey proceeded to comment in some detail on the symptoms recorded in Dr. Silk's tabulated cases, symptoms which, he said, gave evidence of a dangerous condition. In bromide of ethyl there existed the death element, viz., in the bromine it contained, and he could not but think that the general use of the drug would result in deaths—he was going to say—innumerable. He would, at any rate, counsel dentists not to dabble in it.

Dr. DUDLEY BUXTON, like Mr. Braine, had had no personal experience of bromide of ethyl given in dentistry. He had some knowledge of it given in general surgery. And really he might plead that excuse for speaking, for he did not regard it as safe to dissociate the account he had heard of its use in dental surgery from what he knew of its use in general surgery. It seemed to Dr. Buxton that the time element, *ie.*, the shortness of the induction of anæsthesia, and the shortness of the operation had nothing at all to say to the amount of danger of this or any other anæsthetic. It had been shown years ago that the danger of the alcoholic compounds seemed to be largely due to the haloid material, chlorine, or, in this case, bromine existing in the molecule. From observations which he had made, and which, when more mature, he should hope to place before the profession, he thought they were dealing with a drug closely allied to chloroform, not only from a chemical but also from a physiological point of view. It had been the fashion to decry chloroform, but Dr. Buxton was not at all one of those who had a feeling of antagonism towards it. He regarded it as very valuable when given with a full sense of responsibility. It was well known that chloroform would produce long or short anæsthesia in proportion to the dose employed—a few whiffs would induce slight anæsthesia without after-effects. On the other hand in working with the bromide, those who had had a larger experience than himself would concur with him that it was an anæsthetic which could not be used for anything but short operations. It would be said, "Therefore it can be used for dental operations." Yes, but in using it let it not be thought that an agent free from danger was being employed, for, in Dr. Buxton's opinion, its physiological action was such that death might be caused by it any day. an opinion which was supported by the deaths reported from abroad. Dr. Silk had shown that the drug produced in the majority of cases heart failure in some form or another, and any substance which produced heart failure ought not to be employed in operations so comparatively trivial as dental operations,

Mr. Ashley Barrett asked if Dr. Silk would say in his reply, if he thought it necessary to induce his patients to fast.

Mr. W. A. Maggs had operated with the bromide, and certainly the first cases were not such as he presumed Dr. Silk would take the value of the anæsthetic upon, because in those the closed method was adopted, and there were flushing, excitement and other symptoms. The period of anæsthesia, so far as his experience went, was from 50 to 60 seconds. The difficulty of telling when the patient was anæsthetised was to him considerable. It was of course apparent that the breath was shallower, but it was difficult to tell exactly when the patient had had enough. Then as to the recovery, patients seemed very much overcome, much as they do under chloroform, they seemed to recover more gradually than with gas. There was no hysteria or excitement. He did not remember any case so serious as to necessitate any kind of treatment.

Mr. W. H. Coffin said that it would be unnecessary to remind members that at the International Medical Congress of 1881 no less an authority than Dr. Squire advocated the use of bromide of ethyl, and, Mr. Coffin believed, especially for the dental profession, under the impression that the effect and recovery were rapid. At the close of the paper, Professor Wood of America opposed its use and said that in the States it had been practically abandoned as more dangerous than chloroform without its advantages. Mr. Coffin had nevertheless operated a number of times under the drug, and he was bound to say that his impressions of it were not favourable. Upon the last occasion of his using it, the young and enthusiastic anæsthetist who administered for him said, "the beauty of it is you never get any after sickness"; the anæsthetist, leaving soon after the operation, was probably still under the impression that sickness never ensued, but Mr. Coffin's memory of that occasion was far otherwise. Mr. Coffin called attention to the extreme interest attaching to the drug from a chemical point of view on account of the simplicity of its formula, and as being so analogous with ordinary or ethylic alcohol. Its formula might be described as the simplest haloid derivative of the saturated hydrocarbon ethane ($\mathrm{C2\ H6}$) in which one atom of hydrogen was replaced by an atom of bromine. And alcohol was the corresponding derivative, in which an atom of hydroxyl replaced the hydrogen atom. Upon this view, ethylic alcohol might be called hydroxide of ethyl. These considerations might assist in the comparison of the physiological effects of alcohol and the bromide respectively. If he might go beyond what he had said as to its use in dentistry, Mr. Coffin would add that he had a distinct recollection of his father using the drug some years ago for reducing irritation of the throat—laryngeal spasm—and also on his own person for asthmatic attacks.

Dr. SILK having briefly replied, the usual votes of thanks having been passed, and the announcements for future meetings having been made, the proceedings terminated.

Odonto-Chirurgical Society of Scotland.

THE Third Ordinary Meeting of the Society was held on January 8th,—the President, Mr. JOHN A. BIGGS, in the chair.

Mr. Alexander Kay Finlayson, L.D.S.Ed., Edinburgh, Mr. K. E. O'Duffy, L.D.S.Ed., Dumfries, were balloted for and duly admitted as members of the Society.

Mr. G. W. WATSON gave a demonstration illustrative of Dental Physiology and Pathology by means of the lime-light lantern and slides, taken from his own negatives. The exhibition was a highly instructive and valuable one, and covered a wide field in Dental Histology, and though all the slides were highly appreciated by the members present, perhaps those illustrating the different stages of dental caries, and the micro-organisms connected therewith, directly and indirectly, called for special remark.

Among those shown were sections of the spine of the rostrum of the saw fish, and the lingual ribbon of snails, with teeth. Sections of reptilian and human bone; sections of tooth and jaw showing pulp, etc., *in situ*; transverse section of a tooth and pulp, odontoblast cells well seen; vertical sections of tooth and jaw of cat, exhibiting Sharpey's penetrating fibres passing from periodontal membrane into cementum; exostosis, long and transverse sections; odontome $B\frac{0}{2}$; vascular canals in cementum; pulp undergoing calcification;

nodular calcification ; sections of calcified pulps ; dentine of repair ; dentine excrescence ; osteo dentine (human) ; osteo dentine in odontome of horse's tooth.

Degenerative conditions of pulp ; calcareous cylindrical degeneration of pulp ; * hyperæmia of pulp, nerve fibres well shown ; * acute pulpitis ; chronic pulpitis ; acute pulpitis very highly magnified, showing pulp cells, connective tissue, and enlarged blood * vessel with the individual corpuscles exhibited in the interior ; suppuration of pulp ; hypertrophied pulp.

Epuloid fibro plastic tumour, with bony spiculæ present ; epithelial cells from tongue covered with bacteria ; cultivation ditto ; streptococcus pyogenes ; organism of suppuration ; oidium albicans, organism of thrush.

Various slides of cultures of bacilli and micrococci from mouth ; four slides of organisms separated from pus of pyorrhœa ; tubercle bacillus, organism of phthisis. Four slides showing the various organisms present in a dirty mouth. In connection with these slides, Professor Miller has recently calculated that a very dirty mouth may contain 1 billion 170 million organisms. Beautiful strings of strepto bacteria in pus from an antrum case.

Proceeding to the pathology of dental caries, Mr. Watson showed one of the principal structural defects in teeth, viz., granular enamel and interglobular spaces ; next a portion of carious dentine with fringe of leptothrix growing from it ; this organism he mentioned being invariably found growing from the external layers of carious tissue. A series of slides were then exhibited illustrative of the effects of caries on the tubules, viz., enlargement and varicosities, and the various organisms—bacilli, micrococci, sarcinococci, and leptothrix—shown to be present in the tubules ; the presence of leptothrix filling the tubules he mentioned as being rather a rare condition. Transverse section across the tubules was also shown, delineating the enlarged tubules filled with organisms, and the irregular excavations caused by the destruction and peptonisation of the tissue by the advancing organisms.

Lastly, was exhibited a section of artificial caries, kindly given to Mr. Watson by Professor Miller, and which in all respects corresponds to the natural caries, so much so that the natural cannot be dis-

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* Blood vessels full of blood in this series. Liquefied putrid pulp swarming with leptothrix threads, curved and straight bacilli, bacteria and micrococci.

tinguished from the artificial. Mr. Watson mentioned that Professor Miller had gone about his experiments for the production of artificial caries in a very scientific manner, and pointed out the difference in the methods employed by Messrs. Milles and Underwood as one not likely to result in true caries, since caries is always associated with an acid ferment, while in putrefactive degeneration the products are found to be alkaline.

Mr. Wilson moved, and Mr. Amoore seconded a sincere vote of thanks to Mr. Watson for placing before them in so interesting a form the result of what must have been some years of deep and patient researches, and congratulated him upon the success that had attended his efforts.

The Fourth Ordinary Meeting was held on the 12th February, the President, Mr. John A. Biggs, in the chair.

On behalf of Mr. G. W. Watson, who was unavoidably absent, the Secretary read the following communication, the paper being illustrated by a large drawing of the head of the whale alluded to. (At the conclusion of the paper, see page 114).

Mr. Wilson said he agreed with Mr. C. S. Tomes in considering the anomalous layer, which had been described as modified vasodentine, as most probably a portion of the cementum, as what he took to be the granular layer came between it and the ordinary dentine. The line of demarcation between it and the normal cementum was sharply defined. The micro-photographs were very good, but he would not have ventured to express an opinion had he not seen the originals. The same structure was found in M. Sowerbeyi, and would most probably be found in the extinct species also.

The President said he was pleased to hear Mr. Watson's interesting and valuable paper. It was, however, of too abstruse a nature for him to make any observations upon. He therefore thought it fortunate Mr. Wilson was present, and had contributed so much (in Mr. Watson's absence) towards a better understanding of the paper. He thanked Mr. Watson for his communication, and Mr. Wilson for his commentary.

Mr. Macleod, on behalf of Mr. Platt, of Stirling, who was unavoidably absent, submitted a clever little device for retaining the rubber dam in place when the use of the clamp was inexpedient. The device consisted of a small tube with a bead head and a pin also with a bead head. The tube is passed between the necks of two teeth from the buccal side—after the rubber has been adjusted—and the pin is then slid into the tube from the lingual side. This keeps the rubber securely in place and leaves the four walls and crown of the tooth to be operated upon entirely free from obstruction. It is more easily applied in some situations than the clamp, or silk twist, and allows the patient more freedom in resting the jaw during a long operation. The pins are made in different lengths of about $\frac{1}{2}$ to $\frac{3}{4}$ of an inch, to suit the varying requirements of cases, and of about the same diameter as an ordinary small toilet pin. The tubing to match can be had in lengths from the jewellers' material shops, and cut to suit. The beads used for the head to the tube and the pin are the ordinary white embroidery beads, small size.

Mr. Macleod also presented, in the name of Mr. E. W. Satchell, of Sydney, N.S. Wales, a capital specimen of osseous union of second and third molar. The second molar was badly decayed, and in being extracted brought the hitherto unseen third molar with it. Mr. Macleod showed from his own collection an upper right molar, from which the inner cusps and lingual wall had been obliquely fractured during football play, also a right upper lateral, the root of which presented a grooved appearance from absorption, owing to pressure from a suppressed canine, which was traversing the jaw in a horizontal direction.

The PRESIDENT said they were indebted to Mr. Platt, of Stirling, for his ingenious little device, communicated by Mr. Macleod, to whom they were still further indebted for the other cases of interest he had brought before their notice. The President said he feared that being a conversational meeting there might be a dearth of matter to fill it up. He, therefore, brought with him a lower jaw on which he had performed a series of operations, which he thought would interest them, and passed it round for inspection. The right wisdom tooth was filled on the masticating and buccal surface with Cottrell's flint edge alloy. The second molar had a large crucial cavity filled with Ash's No. 20 gold foil. The first molar had a large buccal cavity with extensive fissures in the masticating surface filled with Wolrab's gold cylinders. The second bicuspid, two crown cavities filled similarly. First bicuspid, crown cavity filled with Stainer's plastic gold. Canine, large crucial cavity in labial surface, filled by Dr. R. Richter's inlay. The central incisor was fitted with an artificial crown on Buttner's system. The first and second bicuspid, left, treated similarly with contoured gold backs, and showing gold filling on the mesio-buccal position. First molar, large filling, produced by burnishing a piece of sheet gold plate over the cavity, trimming it, and filling the cavity with cement, and then burnishing the gold down. The second molar has a gold crown constructed out of one piece of gold. The third is filled with Foster Flagg's white filling. The gum is modelled in pink wax.

Students' Society, London Dental Hospital.

ANNUAL General Meeting, held Monday, January 19th, 1891, Mr. LEONARD MATHESON, President, in the chair. The minutes of the previous Meeting were read and confirmed.

The following gentlemen signed the obligation book and were admitted to the membership of the Society :—Messrs. H. Simmonds, H. G. Danolds, C. S. Hull, G. Northcroft, G. H. Price, H. T. Stevens, T. H. Clarence, H. H. Wilton, W. H. Baker, A. Barnes, J. H. Ranken and F. R. Fountain.

The following gentlemen were balloted for and elected members of the Society :—Messrs. H. W. Tremby, W. H. Harrison, and J. H. Morgan.

Messrs. H. Lloyd Williams and W. May were appointed scrutators of the ballot for the next years' office-bearers, and the voting was proceeded with.

The Secretary then read the following Report from the Council :—

COUNCIL'S REPORT.

GENTLEMEN,—In presenting you their Twenty-eighth Annual Report, your Council are happy to record a further step in that career of progress which has characterised the Society in the past ; and one on which it may look back with satisfaction, if not with pride.

The numerical strength of the Society has largely increased during the past year. There have been 49 new members elected since the beginning of 1890.

The attendance at the meetings has also shown great signs of improvement, the average attendance has exceeded 40, and on one occasion the number present rose to 60. These figures have not been reached in any previous year.

The increased attendance may be partly accounted for by the fact that the hour of the meeting has been altered from 7 p.m. to 8 p.m.

This arrangement has now had a year's trial and has proved a success.

The papers read at the meetings have been such as to strengthen the high reputation gained in the past by the Society, their comprehensiveness, practical utility and literary merit being appreciated by those who have heard them.

The Society's Prize for the year 1889 has been awarded to Mr. Woolf, and your thanks are due to Messrs. Woodhouse and Lloyd Williams for the care and trouble expended in examining the papers.

The increased value of your transactions in the eyes of the editors of the Dental Journals has led to a desire for reports to be published in their organs, and arrangements have been made for this to be complied with.

During the past year your Council have been regretfully obliged to forego the services of Messrs. Segg & Co., who have been your publishers hitherto, and to seek elsewhere for the printing of the Society's transactions. The immediate cause of this was the Council's unwillingness to make any binding agreement which would fetter the future action of the Society. At the same time your Council wish to record their appreciation of Messrs. Segg & Co.'s services in the past. Arrangements have now been made with the publishers of the DENTAL RECORD for the issue of your transactions, which leaves the Society free as regards the future.

The library has been enriched by several gifts of books, among others being the American System of Dental Surgery, given by a past President; a large number of Dental Journals which had accumulated in past years have been collected, the missing numbers supplied and the whole have been bound. This has formed a considerable item in the expenditure of the year.

Fresh rules have been made with regard to lending books from the library, and keys are now in the possession of the librarian and Mr. Camps, through whom alone access to the book-case may be obtained.

In future your transactions will be issued with the date on the cover, and numbered and arranged in volumes, so as to facilitate binding, and an index will be compiled for the volumes in your library.

A welcome addition to the value of the Society as an educational medium, has been arranged for in the form of clinical meetings, to be held once a month. These are for the practical exhibition of new methods of treatment, and for informal discussion on interesting topics. The first of these clinics was held last month and in the opinion of all was a decided success.

The Council notes with great pleasure the interest taken in the Society by its past members, as evidenced both by their frequent presence at its meetings and by the specimens sent by them to your museum. In conclusion your Council venture to hope that the increase in numbers may not result in a decrease of individual force, and would impress on the Society that each member must put forth personal effort if the next Annual Meeting is to find the Society a step higher in the pursuit of the " high white star of Truth."

TREASURER'S REPORT.

The TREASURER then read his report as follows :—

Mr. President and Gentlemen,

It is with great pleasure I bring before you the annual report of the financial condition of our society, for though the balance in hand does not exceed that of last year, yet the accounts point to an increase in the number of ordinary subscriptions, which augurs well for the continued prosperity of the society.

The expenses this year have been somewhat heavy, one item of nearly £3 having been paid for the binding of a large collection of the current Dental Journals, which now form such a valuable addition to our library. This account may practically be considered to extend over the past years.

I regret having to point out a marked decrease in the number of honorary subscriptions, the amount received for honorary members during the past year being less by over £6 than that subscribed in 1889.

The total receipts during 1890 amount to £19 10s., and the expenditure to £20 18s. 5d., which shews a deficit on the year's working of £1 8s. 5d., this being deducted from last year's balance leaves the amount of £21 18s. 6d. now in the hands of the treasurer.

I wish to express my hearty thanks to Mr. W. May, for his great kindness in collecting subscriptions, &c., during my unavoidable absence from the Hospital.

Dr.	£	s.	d.	*Cr.*	£	s.	d.
To Balance 1889	22	16	11	By Student's Prize	3	3	0
,, Honorary Subscriptions	5	2	6	,, Cosmos	0	10	0
,, Ordinary Subscriptions	8	12	6	,, Printing Transactions ..	6	1	6
,, Entrance Fees	6	5	0	,, Teas	2	12	6
				,, Honorarium Camps ..	2	2	0
				,, Book & Binding Journals	2	19	6
				,, Wrappers and Postage ..	2	5	6
				,, Miscellaneous	1	4	2
				,, Balance with Treasurer ..	21	18	6
	£42	16	11		£42	16	11

THE SCRUTATORS having retired to count the votes, casual communications were then called for.

Mr. BREEZE showed a model, and described a case in which the enamel of the two permanent centrals was very defective, the cause being, presumably, an injury to the preceding temporary teeth.

Mr. HANKEY presented an upper bicuspid tooth with two widely divergent roots.

Mr. PARRIS showed a special tray which he had devised for taking impressions of roots for crown work; also an articulator which he had adapted to hold the models when made. One of the models exhibited had an important tooth cast in copper amalgam. This was done by packing the amalgam into the impression of the tooth before making the model. The result was a metal tooth which would bear manipulation much better than the ordinary plaster model.

Mr. BALDING presented a model showing two supernumerary upper left wisdom teeth.

Mr. HARRISON presented a large sequestrum of bone which he had removed from the upper central region. This contained within it a developing permanent central tooth. The necrosis was a sequel to a bad attack of measles.

Mr. W. MAY exhibited two models which illustrated the fact that the prolonged retention of temporary molars was a frequent cause of irregularity.

Mr. WM. HERN presented to the Society's Museum a mummified cats' head, which he had obtained from those which had been sent over a few months ago for purposes of manure. He remarked that it was interesting to note the small difference there was between the specimen shown, and a cats' head up to date. Evolution must have proceeded slowly during the three or four thousand years since the specimen was living. He suggested that the head should be kept beneath a glass case.

The President then announced that the following gentlemen, all of whom were recommended by the Council, had been elected as office-bearers for the ensuing year:—President, Mr. E. Lloyd Williams; Vice-Presidents, Mr. W. H. Dolamore, Mr. E. Preedy; Treasurer, Mr. W. May; Secretaries, Mr. H. Harsant (for the Council), Mr. W. S. Holford (for the Society); Curator and Librarian, Mr. T. Coysh; Council (Senior), Messrs. Allin, Breeze, Gask, Goddard and Hall; (Junior) Messrs. Clarence, Danolds, Gabelle and Hayward.

The President then called on Mr. T. Coysh for his paper on "Irregularities of the Teeth and their treatment." (See page 97.)

The paper was illustrated by a series of models and plates showing the various methods of treatment.

The President opened the discussion by complimenting Mr. Coysh on the excellency of his paper. With regard to several of the wires on the plates exhibited, he thought they had been coiled the wrong way, unless Mr. Coysh had some special reason which did not appear. He was in favour of immediate torsion being performed on central teeth if possible, rather than twisting by slower methods. He did not notice any mention in the paper of an excellent means of regulating two central teeth which met at too great an angle. This was by means of a block of wood and ligature of silk arranged as described in the latest edition of Tomes' Dental Surgery. He had treated a case very successfully by this method.

Mr. Baldwin thought that the paper was one that the new students would do well to study carefully. He did not believe that any appreciable growth took place in the front of the jaw, as stated by Mr. Coysh. After the union of the symphysis, growth took place only in the back part, there being only a slight thickening of the fore part. In cases of underhung front teeth, the deformity could often be remedied by instructing the patient to use a paper knife, or piece of flat wood, resting it on the lower teeth as a fulcrum, and pressing out the upper teeth. Cases of underhung bite were often treated by means of chin and skull caps at a very early age, much below the minimum given by Mr. Coysh in his paper.

Mr. SCHELLING spoke in favour of plates, using inclined planes as the mechanical power, and asked for the opinion of others.

Mr. HARSANT did not approve of pegs as a means of moving teeth, as they had no expansive power in themselves, and the plate could not be in position till the peg had done its work. Blocks of compressed hickory wood could be let into the plate so as to fit the teeth, and they would gradually expand as the moisture permeated the wood. This was an excellent method of moving teeth. Where it was desirable to use india rubber as the tractive force, he had found that strips of white india rubber, such as could be bought at rubber shops, answered better than than the red bands generally used and had the advantage of showing less.

After it had been decided by vote to prolong the meeting for an extra half-hour, Mr. PREEDY continued the discussion. He thought that the great principle underlying the proper treatment of irregularities was to use the pressure on the teeth very gradually, and for a long time. He considered that where teeth were moved into place quickly they had greater tendency to return to their original position than if gradually moved.

Mr. GARDNER remarked on the importance of obtaining our patients' intelligent help in treatment. It often made all the difference between success and failure to have the patient take an interest in the case and help the operator.

Mr. BREEZE had found hickory pegs very inefficient as a means of pushing out teeth which were situated inside the arch.

Mr. BLAINE said he had seen cases which exemplified very clearly that nationality was one of the causes of dental irregularity.

Mr. RILOT thought that not enough emphasis was laid on the fact that when it was possible to regulate without plates, it was greatly preferable to do. Mr. COYSH had not mentioned the forceps, as an aid to regulation. To his (Mr. Rilot's) mind this was omitting one of the most important means available for regulating teeth.

Mr. WM. HERN spoke in eulogistic terms of the exhaustiveness of the matter dealt with, as well as the sound judgment shown in the treatment of the subject. He considered the plan of taking full and accurate notes of each regulation case, *e.g.*, method of treatment adopted, force employed, time taken, etc., together with a series of models showing the successive stages in the treatment, an exceedingly good one for students to practise. Such a record would be valuable as teaching not only what to do in a given case, but also what method to use and force to employ most advantageously. In regard to the use of wooden pegs and wedges he had found some confusion existed among students. In the peg no intrinsic force could be counted on, it was nearly a passive body brought into use by the muscles which close the lower jaw. The plate should therefore be so constructed that the lower front teeth struck well on the plate, the force thus exerted tending to drive the pegs up the inclined lingual surfaces of the upper front teeth. In wooden wedges however a considerable amount of intrinsic force could be counted on. They should be made of some soft parallel grained wood (common pine-wood answered the purpose well) which had been tightly screwed up in a vice for a few hours, and should be inserted in such a manner that the object to be moved was parallel to the grain of the wedge. It was necessary too for the plate to be pretty firmly fixed. He emphasized the necessity of advice to patients in regard to care in cleansing their plates, and spoke of a device which he had used with advantage for retaining teeth in position after regulating, viz., fitting a collar of thin platinum on the tooth, or teeth and soldering a small cross bar to impinge on the lingeal or labial surfaces of the adjoining teeth. This did away with the retaining plate altogether and thus was an advantage.

Mr. H. LLOYD WILLIAMS thought that the coils of the wires in several of the plates shown had been placed in inaccessible positions. The type of face should influence us in deciding what treatment to adopt, in prognathous cases it was best to remove the canine in preference to other teeth. As an argument that boys' teeth should be regulated, he reminded members that in adult life men were liable to malignant diseases of the tongue, and therefore it was as well not to have a contracted arch, but one in which the tongue had free movement.

Mr. COYSH in reply said, that he tightened the springs by compressing the coil which was turned in the necessary direction for this. The case which Mr. Baldwin quoted seemed to be one of regulation of the jaw rather than the teeth. It was true that the jaw did not grow in size in front, but thickening took place, and the incisors moved forward by this means, and thus gave room for the canines. Mr. Baldwin had misunderstood him as to drilling holes in the tooth: what he had said was, they might be drilled into the collars on the teeth. As to other plans mentioned, several were very useful, but owing to the length of his paper he had been unable to describe more methods. For twisting front teeth he had found nothing so effective as elastics applied on to collars fitted on the teeth. He agreed with Mr. Rilot that regulation by forceps was best, and had certainly intended his paper to convey that he thought, with Mr. Hern, that notes which taught us our failures and the demerits of a plan, were more useful even than the history of successes. He reminded Mr. Preedy that he had said that force should not be carried to the extent of giving pain. The question of room for the tongue would come under the head of giving ease of speech. Mr. Colyer's remarks were important, and opened up the interesting subjects of the result of our treatment upon the teeth themselves, and their permanence afterwards.

A vote of thanks was then accorded to Mr. Coysh and to the gentlemen who had brought forward casual communications.

After announcing that the second of the series of Clinical Meetings would be held on Monday, January 26th, at 8 p.m., the PRESIDENT delivered the following valedictory address.

Gentlemen,—I am not going to make a valedictory address, but as I complete to-night my year of office as your President, I cannot vacate this chair without saying one or two words. My sincere thanks are due to you for the unwavering consideration and courtesy which you have shown to me, for the pleasure I have found in presiding over your meetings, for the instruction I have received from many of the papers and discussions, and for the opportunities I have had of becoming better acquainted with many of you whose friendship I value.

To those of you who have only just joined this Society, I would point to the constant presence at our meetings of old members as the best possible evidence of the value and importance of what goes on here; and I would urge you to make a point of regular attendance. To those of you who are about to leave our ranks, in order to take up work elsewhere, I would say: take with you the traditions and usages that you have found prevalent here. Deal with things in a practical and scientific spirit; freely communicate to fellow-students and practitioners facts, discoveries, methods of practice which may come to your knowledge; refuse to live a selfish narrow life; do what in you lies so to live and practise as that your share, at all events, may not be wanting in the work of establishing dentistry in the position that it ought to hold—an unchallenged position among the liberal professions.

Mr. HERN then proposed a vote of thanks to the President and retiring officers for their services to the Society.

This was seconded by Mr. DOLAMORE and carried with acclamation.

The PRESIDENT then briefly replied. after which he announced that the next meeting would be held on Monday, February 9th, when Mr. Balding would read a paper on "Treatment of Dead Teeth." The proceedings then terminated.

Dental News.

NATIONAL DENTAL COLLEGE.

DURING his visit to England, Dr. A. W. Harlan, Professor of Materia Medica and Therapeutics in the Chicago College of Dental Surgery, lectured to Dr. Cunningham's class on February 13th, taking as his subject "Dental Therapeutics as related to Operative Dentistry." Alluding to the experiments he had carried out with regard to the action of drugs as coagulators and non-coagulators of albumen, the lecturer expressed the opinion that the ethereal oils were most valuable in dental operations. They are non-coagulators, and as they tend to absorb and store up oxygen they are useful as cleansing agents. The oils of turpentine, etc., are of use as bleaching and disinfecting agents by slowly evolving peroxide of hydrogen, although the quantity is too small to rely upon solely. With regard to "coagulators," it was pointed out that they are not necessarily escharotic, especially when some of them are diluted with water. A freshly exposed pulp should not be treated with an irritating agent like carbolic acid, which destroys its substance (whereas Nature's method is to repair without destroying), but it should be protected from infection by a bland non-coagulating disinfectant, as an oil, or by boroglyceride, rejecting anything anything requiring dissolution in water. Other points touched upon were the treatment of sensitive cavities (by a stream of vapourized oil), the devitalizing of pulps, and the filling of roots. In the last operation the lecturer introduces into the canal eucalyptol or oil of cajeput, each of them being a solvent of gutta percha, a solution of which is then pumped up. Finally a cone of gutta percha, dry and unheated, is pushed in and packed solidly home.

At the close of a very interesting lecture several questions were asked and replied to, and a vote of thanks passed to Dr. Harlan.

Students' Society, London Dental Hospital.

On Monday, January 26th, the above Society held its Second Demonstration Evening.

The principal attractions on this occasion were the demonstrations given by Messrs. Woodruff and Ackery. The former filling an upper lateral (putrid pulp) by the method known as the immediate, the latter two lower molars with non-cohesive gold without the aid of the rubber dam. Both these operators' efforts were attended with success in all directions, attracting large and appreciative audiences.

In addition to the above, Mr. Watts demonstrated in an extremely lucid manner the effects of plaster investments and Mr. Ladmore the mode of making instruments. Microscopes were also exhibited, specimens showing some of the various micro-organisms found in teeth being included in the number. This exhibit of specimens is extremely useful to the students, as microscopic specimens form an important item in the portion of the Examination devoted to Dental Anatomy. Various cases were shown, amongst the principal of which we noticed :—(1) Case of congenital absence of teeth, the patient aged 18 only, possessing in both jaws only seven teeth. (2) Case of congenital absence of upper laterals and canines. (3) Case of an irregularity of the upper central incisor (in a child of 8) twisted on its axis. (4) Case of a growth in the upper jaw of a young man (æt. 22), the duration of growth being six years, the presence of fluctuation being very doubtful.

The utility of showing cases such as the above was apparent, as cases (3) and (4) opened up various probabilities as to diagnosis and treatment, and it is by discussing such questions that the students are considerably assisted in their work.

At the conclusion of the demonstrations the meeting adjourned to the operating theatre, where a lively and interesting discussion ensued on the various demonstrations and cases which had been shown, Messrs. Hern, Woodruff, Ackery, and Colyer taking a prominent part.

THE DENTAL RECORD, LONDON: MAR. 2, 1891.

BROMIDE OF ETHYL IN DENTAL PRACTICE.

PROBABLY everyone is pleased to learn that our experts are still busy experimenting with anæsthetics. The results given at the last meeting of the Odontological Society were not such as will, we imagine, encourage the adoption of Nunneley's anæsthetic among English dentists. Dr. Silk who introduced the interesting young stranger, was not able to state a very strong case for him, his appendix showed that in a rather large number of cases more or less untoward symptoms followed its use. However, it must be remembered that some of these were hardly test cases, inasmuch as Dr. Silk had adopted a better method in the later ones. The surgeons who spoke of their experience in operating upon patients who were under the bromide did not find it satisfactory, as there seemed some doubt when the patient was "under," and the after sickness, as with chloroform and ether, struck them as placing the anæsthetic behind our old familiar friend "the gas." It is curious how nitrous oxide holds its own, at one time cocaine, at another oxygen, and other gases crop up, and now bromide of ethyl, but like Tennyson's brook—"gas" 'goes on for ever.' The late Mr. Clover thought ethidene dichloride was to oust gas and everything else, but his vaticination has fallen to the ground. The anæsthetists who spoke on Dr. Silk's paper, although several of them had not tried bromide of ethyl in dental practice, spoke strongly against its use, and if as was urged by Dr. Dudley Buxton, the action of this anæsthetic is physiologically that of chloroform, its employment in dentistry must be open to the objections usually advanced against that substance.

The Odontological Society Membership as a Dental Blue Ribbon.

AMONG the many points which Mr. Hutchinson made in his excellent and practical address, was that the letters

M.R.O.S. should stand in the dental world as an equivalent to the F.R.S. in the world of science. There are practical difficulties in the way, if the plan—a really good one by the way—be advanced quite on the lines sketched lightly in by the President. Olympus with a sparse crowd, composed though it may be of gods would be chill and apt to depress its human votaries. But were two grades to exist in the dental Olympus, first, the membership as at present ordered, and then a fellowship granted *honoris causâ* from the rank and file of the members, then would Parnassian slopes teem with eager aspirants, and the higher qualification become merged in the reward of the more highly qualified. The cleverness of boys is tested by the cramping system of public and competitive examination, but the intellect of men needs years of patient labour to mature, nor can its fruit be judged of by the crop of one year's growth.

OBITUARY.

JOHN SUGDEN CRAPPER, L.D.S.I., D.D.S., Penn.

We have to announce with deep regret the death of John Sugden Crapper, of Hanley, the founder and active director of the Dental Manufacturing Company, which took place on February 20th, at his residence, Broad Street, Hanley. In Mr. Crapper the profession has lost an active and representative member, while Hanley loses a citizen alike active in good deeds and prominent in the promotion of the well-being of the town of his adoption.

Mr. Crapper was born in Halifax, and took the Irish license in dentistry, but subsequently (1882) he crossed the Atlantic, and after studying in America, obtained, by examination, the D.D.S. of the Pennsylvania College. Mr. Crapper was widely known and esteemed as a dentist, his practice extending far outside the mere locality in which he worked.

In 1876 Mr. Crapper held the office of Mayor of Hanley. In 1875 he was appointed a borough magistrate.

Not a few useful papers upon professional subjects have from time to time been contributed by Mr. Crapper to current dental literature.

In connection with the Dental Manufacturing Company, Mr. Crapper was much appreciated by directors and shareholders, his regular attendance at all meetings showed his deep interest in everything connected with the Company, and by his keen business counsels and insight into the wants of the profession, must make his loss deeply to be regretted.

THE DENTAL RECORD.

VOL. XI. APRIL 1st, 1891. No. 4.

Original Communications.

PRESIDENT'S INAUGURAL ADDRESS.*

By E. LLOYD-WILLIAMS, M.R.C.S., L.R.C.P., L.D.S.

GENTLEMEN,

MY first words must be those of thanks to you for having deemed me worthy of occupying the presidential chair of your Society, and the honour—which I keenly appreciate—is not a little enhanced by the fact that this Society is of its kind one of the oldest, if not the oldest, not only in this country but in the world. Dental Surgery is but a stripling in the scientific world; yet I venture to say that in time to come, when it shall have attained sturdier proportions, it will be able to look back with feelings of gratefulness to the days of infancy when its cradle was rocked on many an occasion by hands which may have been clumsy, but were yet full of youthful enthusiasm, at the Students' Society of the Dental Hospital of London. Many of the men who to-day are doing the best work in literary and other paths for the building up of our profession have been connected with this Hospital, and not a few of them with this Society. They kindled here a flame which has not died out, but has been left to you to feed. Their work is at once your inheritance and your inspiration.

If then this Society has in years gone by been productive of so much good—as it undoubtedly has, I would have you regard your privilege of membership in no uncertain mood, but with grateful recognition of the substantial advantages which are here held out to you. And to this end I would claim your consideration while I attempt—as briefly as I may—to place before you some of the most salient advantages of such a Society as this, of which, I trust, we are all so justly proud.

I. Perhaps the first consideration which one might point out as being of paramount importance in connection with such a Society as yours, is that it presents *a medium for the free interchange of*

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* Delivered before the Students' Society, London Dental Hospital.

opinion. And there are few things of more truly educational value in the study of any practical science than—not only to tolerate, but actually to listen for and weigh the opinions of others. The "good old days" which are often referred to, when a dentist's cabinet was the receptacle of as many professional secrets as he could cram into it, are happily at an end. In common with all departments of science, true dentistry is cosmopolitan and universal, it seeks the light, and rejoices in making itself known wherever it can be of service ; it has no dark ways, no secret systems, no methods special to the charlatan who would claim them. The practice of our specialty is in no sense esoteric ; it is broad, appreciative, and tolerant. And this being so, we may surely rejoice in the spirit of true studentship, and be ready to avail ourselves of such opportunities as this Society affords, by not only benefiting from listening to others, but also seeking to advance—be it in ever so humble a way—the good of our fellows. A free interchange of opinion on matters which crop up in our daily work must be of inestimable value, for there is none, however competent, who may not benefit by the experience of others. It has often been pointed out as a subject of complaint at this Hospital, where we have a staff of seventeen surgeons, that the unavoidable variety of opinion and practice must necessarily perplex the student. But what seems to be a disadvantage is really of distinct value ; and whatever element of perplexity may appear upon the surface must rapidly sink into insignificance, as compared with the lasting benefit of having practical details dealt with under the varying conditions of the individual teacher's experience. In days to come when you are able to weigh matters more accurately in the light of experience, you will have no reason to regret the fact that you were taught more ways than one of dealing with everyday troubles. Depend upon it that breadth and variety of opinion have their own educational value, and you will do well to foster the habit of being good listeners whilst members of this Society.

II. But there is another point which it is well we should not lose sight of, and that is, that in such a Society as this, where debate forms such a prominent feature, you have *the opportunity of cultivating the gift of clear and graceful expression of ideas.* I grant you that from a professional point of view, this is of quite secondary importance, and yet it is a point that we cannot afford to lose sight of, whether we regard it as affecting us personally or collectively. To be a clear and impressive speaker is not necessarily to be adorned with a gift which only panders to conceit : it is a gift to be cultivated in every legitimate way for the sake of others, for we must remember that a clear and concise statement of one's views—I speak now in a professional sense—may be of distinct value to those who listen to you ; and here probably lies the gist of the matter when we hear universal complaints of the comparative failure of lectures. The student is apathetic, nay even sleeps upon occasion, simply because the lecturer is unable to interest him in his subject. Were the lecturer a gifted speaker he would be able to evolve something more than words, something of *himself* in his words, which for teaching purposes is of inestimable value. You cannot all be lecturers ; you may all be teachers ; you must all be influences in the circles which you enter. But whatever your lot may be you will never regret having cultivated the gift of public speaking, especially if you should be able to turn it to really useful account.

At the International Medical Congress held a few years ago in America, the faltering tones of the average English medical man were rather conspicuous. A correspondent writing to an English medical journal, said that this defect was almost unknown on the other side of the water, and complained especially of the frequent use of the words "er-er- -" in the speeches of most of the English visitors. He wound up with the remark that "to err is human, to forgive divine." Now if that particular critic were in the habit of attending our dental meetings in this country, he would find ample scope for the exercise of the virtue of forgiveness. No, we certainly are not very fluent speakers, and we look to you, the future hope of the profession, to do all that in you lies to wipe out, as far as may be, this reproach from our midst. In this Society you have the opportunity of cultivating the power of speaking, and during this coming session I trust you will not be slow to avail yourselves of it ; and if I might suggest a means of promoting the encouragement of good speaking, I would advocate the more regular discussion of papers read here, by the appointment of special speakers to open the debate. In this way not only would you reap the advantage of having the more salient points of the paper brought before you, but the discussion itself would open up on more even lines, and prove of more general interest to the body of members.

III. Another great advantage, which becomes important to every earnest student, is the fact that a society such as yours should prove *a stimulus to careful observation and recording of scientific facts.* A very large proportion of the misery which exists in the world is brought about by laziness and incompetence ; and the same causes are liable for the non-success of the professional life. There is a species of mental inertia which is often a sore temptation even to a busy man. How easy it is to go through life and miss seeing a host of things which are out of focus, simply because we are too lazy to use our mental accommodation ! And this lack of observation not only acts upon the individual, but reacts upon the professional body of which he is a member. If our dental literature is not what it ought to be—and in truth we cannot boast that we are rich in this respect—it is because there has been such a demand for the services of the dental surgeon that he has been too busy in disposing of his practical services to trouble much about scientific observation. The time is coming, and coming fast, when the field will be more largely occupied with workers, and then I trust that we shall have a steady advance of dental science, even though the purses of the dentists will not be quite so heavy. I would impress upon you as earnestly as I can the great value to yourselves and others of acquiring the habit in early life of being accurate observers, of keeping your eyes open whilst at your work, and cultivating a general spirit of intellectual wakefulness. I am pleased to think that from year to year good substantial scientific work has been done by students at this hospital, and I know of no agency more calculated to foster the spirit of enquiry, and encourage the habit of recording facts than the Society of which you have the honour of being members. Much light has been thrown of late upon different phases of disease by means of what has been termed " collective investigation," and I think that, in a more limited way, something in this direction might be attempted with advantage by this Society. A good deal of interest attaches to collective work of all descriptions, and the value of such work depends in large measure upon the fact that individual error or personal craze have less chance of creeping into prominence. There are several vexed questions, which I, for one, should very much like to see taken up by a committee of students, in the true spirit of scientific enquiry. Out of many, I will only mention two subjects which might be taken up with much interest. One is the perennial question of root fillings. I think the Society would benefit from the perusal of a careful report, embodying the results of accurate experiments on the various methods of filling pulp canals. Actual experiment would, I feel sure, reveal many current fallacies, while the work itself would scarcely fail to have a very beneficial effect upon the investigators. Another question involving a variety of opinion would well repay investigation, and that is the relative advantages of the extraction of molars or bicuspids for the relief of crowded mouths. A large series of models taken before, and at varying periods after the operation, would do much to clear the atmosphere of doubt which I sometimes see expressed in students' faces. Scientific fact is always capable of demonstration, and many of our perplexities in daily practice often arise because we ignore such an elementary truth. We are all very prone to accept the deductions of others—provided they suit the temporary purpose we have in hand—rather than take the trouble to find out whether the particular deduction has a true basis. I know of no way more calculated to dispel such a habit of intellectual laziness than to take up a particular subject and try and work it out systematically and thoroughly. Even should the results prove nothing more than was known previously, the exertion expended, the habit of observation cultivated, the scientific enthusiasm aroused—all this has its own value, and is its own reward.

> " 'Tis better to have loved and lost,
> " Than never to have loved at all."

It is, perhaps, not fair to make an analogy between the emotional and intellectual sides of one's nature, and yet in this particular sense the words quoted might be applied with truth to the point just touched upon. To be a good worker is to be indeed happy. Most sincerely do I wish you what is commonly known as success ; but I would a thousand times rather see you good honest scientific workers, both in your own interest, as well as in that of the profession to which you belong. This Society offers you a stimulus to such work—a pure incentive to work for the sake of the work itself.

IV. But the last advantage to which I would call attention is one far different from either of those already referred to—it is that *here you have the means of fostering social cohesion, and cementing professional brotherhood.* And this is a matter which you should not lose sight of; for, although the majority of you are barely initiated into the mysteries of the dental craft, yet it is not a moment too soon for the most raw recruit to begin to imbibe—actively, if he will, but at all events passively—that spirit of professional brotherhood which is all potent for good. If I may venture to express an opinion on a new, and I think I may say a successful departure of this Society, I would attach much value, even from a social point of view, to what we call our "clinical evenings," for we are then brought together under the most favourable circumstances for discussing practical points of practical work in a spirit which ought to render the members of mutual help to one another. A social feature of hospital life, which is also likely to be helpful to you in every way, is the Athletic Club. There you may cultivate a spirit of emulation, and learn to prepare yourselves for the serious work of life, not only by developing your physical powers, but by acquiring that combination of energy and self control which is so inseparable from athleticism.

It is at hospital, and especially in connection with the social features of hospital life, that the student catches the first spark of that social flame which, for want of a better term, we call *esprit de corps*. And what, someone may ask, is this social spirit to do for us? I ask, in reply, what has it done already? It is this fraternal spirit which has rescued dentistry from obscurity, and given it a place of honour as a legitimate branch of medical science; it has raised it from the miry depths of trade secrecy and charlatanism, and established it on the broad basis of a liberal profession; it has taken it out of the hands of the incompetent and ignorant, and entrusted it to the care of carefully educated men of honour, bound together by the common bond of a common desire to fulfil their duties with faithfulness, both to themselves and to their patients. It is to this kindly influence that we owe every amelioration of the dentist's position—whether professional or social; and we should never forget the immense debt of gratitude due to those who have fought valiantly for the good cause of dental reform.

The future is in your hands; and, seeing that the element of social cohesion has done so much for dentistry, I would warmly urge you to cultivate its kindly spirit during your student days. Let the best promptings of your nature have free scope for exercise and development. Let your desire for success—in its best and truest sense—be wrapped up with an equal desire for the welfare of your fellow students, and let your wishes bear fruit in a ready acquiescence to take active part in any scheme calculated to promote professional brotherhood.

These are some of the points which I think worthy of your consideration in connection with this Society, and which I trust will not be lost sight of in consequence of any feeble advocacy on my part. A new session is before us; let us all unite in giving of our best to promote the further interests of a Society to which we owe so much.

The Relation of Medicine and Surgery to Dentistry.*

By Chas. W. Glassington, M.R.C.S., L.D.S.

Mr. President and Gentlemen,

The Paper I am about to read is connected with both the Medical and Dental Professions, and it is one which I thought would have proved of interest to everybody present, as I expected I should have had an assemblage of both medical and dental students, but on looking round I find only one dental student to support my views. I use the word students, for although I am aware there are many in this room who are no longer *students* in name, yet I am sure they will not be offended with me classifying them as such, and I know they will agree with me when I say we cease to be students "when our pulses cease to play and we rest for ever from our labours."

I intended dividing my subject into three parts, viz:—

I.—"The Medical Student and Dentistry."
II.—"The Dental Student at the General Hospital."
III.—"The Limitations of Dental Surgery."

Now, each of these divisions is quite sufficient for a paper in itself, and although your Secretary informs me I am allowed forty minutes to air my views, yet I should not think of boring you for that period.

I.—THE MEDICAL STUDENT AND DENTISTRY.

When a man joins a Hospital and intends to qualify so that he may practise either as a general practitioner (and take fees varying say, from a shilling upwards), or as a consultant (and takes fees from one guinea *and upwards*), or as medical officer in one of the services. or in fact in any of the many ways a qualified man has an opportunity of earning a living, what does he learn about Dentistry? If he be an energetic student he will attend regularly the Dental Department of his Hospital, when the Dental Surgeon is present, and he will *see* how to extract a tooth, and if the Dental Surgeon finds he is anxious to learn, he will teach him how to do it properly. But is there a student who tries to learn anything about dentistry? He says: "Oh, if I had a tooth to extract I should try and get it out, and if not, I should send the patient to the nearest dentist."

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* A Paper read before the Guthrie Society at the Westminster Hospital Medical School.

Now, gentlemen, I do not want you to learn dentistry proper, as there are quite enough of us in that branch of the medical profession, but I think a medical student should be compelled to go through a certain amount of dental tuition. You know for yourselves that he (the medical student) will attend the Out Patients' Department for the eyes, ear, skin, &c., not that he intends to take up either of these subjects as a special study, but, simply that he will be able to "spot" certain abnormal conditions, so that when in practice he can treat ordinary cases, whilst the more obscure ones he sends to the specialist; but as to visiting the Dental Department, never! or, perhaps I had better use Mr. Gilbert's words, "hardly ever."

I hope the medical student of the present day will not think I wish to increase his already more than numerous studies, but for more reasons than one I am of opinion he should know how to *advise* his patients as regards the teeth, even if he cannot operate.

You will perhaps say, "What are your reasons why the medical student should know something of dentistry?" I can give you several.

I remember taking charge of the Dental Department at Westminster Hospital a few years ago, whilst Dr. Walker was away for his holidays, and one of my fellow-students who had just qualified, and was going into practice in the country, came and asked me to let him extract some teeth, as he had never done anything of the kind before. I gave him, as I thought, a nice easy-looking lower molar to extract, and at the same time handed him the proper forceps, as he did not know which to use. To my surprise he could not extract the tooth, and on looking to see the cause I found he had the forceps fixed between the first and second molars, and was doing his best to extract both at the same time.

A medical friend of mine in Yorkshire told me once he was very successful in extracting teeth. He said, "he seldom failed, for if he did not get the roots out, he always managed to get *all* the crown away."

Again, when I was acting as surgeon on a ship, I had occasion to extract several teeth, and my attendant (he was one of the sailors) was quite surprised to find three roots on an upper molar I had extracted, and after a few weeks he remarked, "all the teeth you take out have fangs." I informed him all teeth had fangs, and he replied, "Oh no sir, not all, at least the other doctors didn't often take out teeth with fangs."

On October 1st last, I met an old student of this Hospital, who is now in the Army Medical Service, and I asked him how he got on as regards extracting teeth, and he replied "very well, but," he added, "I don't like the job, and between you and me, I don't think the British soldier does either."

Then again as regards anæsthetics. How many general practitioners know how to administer nitrous oxide gas for dental operations. There are many dentists who are not qualified, simply registered, that is to say, were in practice long before the passing of the Dentists Act, which came into force in 1879, and these, although they know how to administer gas, cannot do so without a qualified man being present. They therefore send for Dr. —— to come and give gas for them, and in many instances, much to their astonishment, find he knows nothing about it. I have seen it myself on several occasions, one was when I had to visit a patient at her own house to extract a tooth. I took my gas apparatus, administered the gas myself and extracted the tooth, but the family medical man, who was present, was quite alarmed at the, what he called, dangerous symptoms the patient exhibited, which were only the ordinary ones of nitrous oxide narcosis. Afterwards he informed me he had never seen gas administered before.

Now, gentlemen, is not this state of things to be deplored? It is humiliating for one to hear from an unqualified man, that some members of the medical profession do not know how to administer gas. As to the remedy, I maintain a medical student should be compelled to attend the Dental Department of a General Hospital for at least three months, and hold an appointment as Dental Surgeon's Dresser, and learn not only how to extract a tooth, but also (and what is more important) which teeth can be saved.

II.—The Dental Student at the General Hospital.

I must confess the dental student has a decided advantage over the medical. He has every opportunity, if he can afford the time, of learning general medicine and surgery, and he has his own special hospital to learn everything about the teeth. But so interested is he in his dental work, that he frequently overlooks his general, and finds out his mistake not only when the time comes for him to be examined, but also in after life. I cannot let this opportunity slip of impressing on dental students the great advantage they secure to themselves by taking the double qualification. I am aware a good many cannot afford the additional time and expense required for this, but to those who can it is the right thing to do.

At a general hospital a dental student is compelled by the "powers that be" to attend not less than one course of lectures on Anatomy, Physiology, Surgery, Medicine, Chemistry, and Materia Medica. It has been said, a dental student wastes a lot of valuable time at the general hospital—I mean the man who is taking the L.D.S. diploma only. Take, say, the lectures on Medicine, and the subjects for that course are, "Acute Specific Fevers or Zymotic Diseases," "Constitutional States." The dental student is bound to attend this course, but what does he do at these lectures? Why, gets into a convenient corner, if the lecture-room is of a horse-shoe shape, as it was in days gone by in the old school at Westminster, and goes to sleep, sometimes is rude enough to snore.

Again, with Materia Medica and Therapeutics. During the course of lectures on this subject, what does the embryonic L.D.S. learn of the action of drugs on the teeth? With all due respect to the teachers at our general hospitals, I answer, "Nothing at all." And why? Because, in the first place, the majority of students are general and not special or dental students, and consequently, do not need this special study, and secondly, the time at the lecturer's disposal does not permit him to go deeply into the subject. I have no hesitation in saying, that even for a general student, Materia Medica and Therapeutics, especially the latter, are not sufficiently dealt with You must remember the whole of these two subjects is gone through in one short summer course and also they are presented to the student during his *first year*, when his knowledge of disease must, of necessity, be very, very vague. If, therefore, the time for Materia Medica and Therapeutics is necessarily short for the general student, what must it be for the dental? At a general hospital, he (the dental student) will learn from his lectures on these subjects, that Iron, Matico and Tannin are hæmostatics and consequently useful in hæmorrhage after tooth extraction; that arsenic is used for destroying pulps of teeth; that Carbolic acid and Creosote are largely used by dentists; and other *equally important* facts, but of the action of these drugs on the teeth, he gets no information beyond what he acquires from his practice at a dental hospital, or from what he reads in the various works and text-books on dentistry.

Again, look at the time a man wastes going backwards and forwards from one hospital to another. You will perhaps say, how would you remedy it? I am afraid, gentlemen, my ideas would take too long to describe now, and would only be interesting from a purely dental point of view, but briefly speaking, I think a dental student (I still mean the man who intends taking the L.D.S. only) should be taught at *one* school, viz.:—a Dental School. I see no reason why dissections should not be done there, and we have plenty of men who would come and lecture for us on Anatomy, General Medicine and Surgery, and when doing so on the two last named subjects, confine their remarks to those diseases which have something in common with dentistry. Of course the dental student would be obliged to go to the General Hospital for a short time, to learn his clinical work. With the man who intends taking the double qualification, he could be exempt from attending these lectures at the Dental School, as he would receive all his general knowledge from the General Hospital. As regards dental materia medica and therapeutics, I have the honour to lecture on these subjects at the National Dental Hospital, so you may think I am prejudiced when I say they ought to be made a curriculum subject.

The last part of my paper, viz:—

THE LIMITATIONS OF DENTAL SURGERY,

is the most delicate and difficult portion to deal with, delicate because I shall speak of it from an almost entirely dental point of view, and difficult because many with better notions on the subject than myself have tried to define it, with no satisfactory conclusion.

The question to be discussed, is—where does dental surgery end, and general surgery commence?

Take, say, a case of simple epulis, with the tumour springing from between two teeth and pushing them apart; it is no trouble to the patient, and he has in all probability come to consult the dental surgeon about a tooth which is carious; the dental surgeon very properly points out the tumour, and advises him not only to have it removed, but also tells him the trouble it may cause, if not removed. Now, is the dental surgeon to send him off to a surgeon, or remove the tumour himself?

Again, he attends a patient suffering from ulceration of the tongue due to the irritation of a decayed tooth with jagged edges; he removes the tooth, but is he to refer the patient to his own medical man to have the tongue treated, or take entire charge of the case himself?

In another case, a child about seven or eight years of age, is brought to him just as he is beginning to shed his temporary teeth, with the permanent incisors erupting, and on examining the oral cavity thoroughly (which all dental surgeons should do, especially in young children), he finds the child's tonsils are enlarged; knowing the evil effects of enlarged tonsils on the developing jaw, he advises their excision. Now, is he to tell the parents to take the child to a surgeon, to an aurist, to the specialist on the throat, to have them excised, or do it himself?

Again, with neuralgia. This I know is a very broad term, but I mean neuralgia of dental origin. After the tooth or teeth have been properly treated, and some pain still remains which requires medicinal treatment; is the dental surgeon within his province in writing a prescription? Or a man fractures his inferior maxilla; who is to treat it, the surgeon or the dentist? Or in cases of ranulas or enlargement of the antrum, or necrosis of the jaw, to whom do they belong? To almost all these cases I say they certainly belong to the dental surgeon, but in some, going on the idea of "Two heads being better than one," I think the medical man should be consulted.

I will give you my reasons why the dental surgeon is quite within his province in treating such cases, and not calling in the help of the physician or surgeon. First of all, during his work at both the Dental and General Hospitals, more particularly the former, the dental student has many opportunities of seeing such cases, and also how they are treated. In addition, he is taught from a medical and surgical, *as well as* a dental point of view, how to treat them, and last, but not *least*, he has to pass an examination, which is a thorough test of his knowledge on all diseases, connected not only with the teeth, but the *Oral Cavity*.

The examination for the L.D.S. Diploma is a most searching one, and although, as I have pointed out before, it is much better for the dental student to take the double qualification, yet it is one which I maintain any man can be justly proud of, and the holder of it should be considered a specialist, not of the teeth *only*, but of all diseases connected with the mouth.

There is one great point certainly to be considered, and that is, where should the dental surgeon draw the line? Well, broadly speaking, any cases where an operation connected with the mouth has to be performed at the patient's house. I consider his work is in his own operating room, and any surgical work which has to be done elsewhere is the work of the surgeon. Even in these cases the dental surgeon should either be called in consultation, or be present at the operation, and should certainly see the case afterwards (I am referring now more particularly to cases of removal of tumours of the jaw). In all such cases I have seen, they have been done without any thought of how the parts removed are to be replaced by artificial means. Also during the healing process large cicatricial bands have been allowed to form, which at times have almost prevented a mechanical appliance being worn. I well remember two or three cases where it was only with the greatest difficulty I managed to fit in artificial dentures, simply from this cause. Now, had the dental surgeon seen these cases, even after the operation, he could have pointed out the reason why these bands should not be allowed to form, and the surgeon could have taken means to prevent it.

Again, in cases of cleft palate. There are many in which the dentist and surgeon will do better in consultation than the latter operating from a surgical point of view only. Referring again to the L.D.S. examination, the candidate is asked how he would perform various operations connected with the mouth, and if he does not know I presume he would fail. Therefore, when he satisfies the examiners he is fully capable to take charge of such cases and has gone into practice, I think he should be entitled to reap the reward of his labours. If not, by all means let the examination be a purely dental one, that is to say, confined to diseases of the teeth pure and simple. I hope you will not imagine I think the present L.D.S. examination too stiff—it is not—it is, as I have said before, the most thorough test a man can go through to obtain a qualification in a special branch of the medical profession. You must recollect, gentlemen, there are many specialists on the eye, ear, throat, skin, &c., and yet not one of these is compelled to pass any special examination at all, let alone such a splendid one as the dental surgeon.

I suppose I may take it for granted, those of you who will argue the L.D.S. should draw a line at operating on the teeth, will not do so, when in addition to this diploma he holds either the M.R.C.S. or F.R.C.S. Although he may be practising solely as a dentist, you will agree he is perfectly within his province by taking entire charge of the cases I have quoted, and I trust the day will soon come when the dental student will see the great advantage of taking the double qualification.

As he is now, the L.D.S. is not supposed by the surgeon to be capable of operating except on the teeth. When he is doubly qualified they can have no such objection. I am quite sure the average L.D.S. does not want to interfere with the work of either the consultant or the general practitioner, for when he is once in the swing of practice, he finds quite enough to do with attending to the teeth alone, but still there are times when a case crops up which he would like to treat, but does not do so for fear the surgeon should say it is out of his province. The way out of the difficulty in the majority of cases is by consultation—" unity is strength." At the National Dental Hospital we have a visiting physician and surgeon, and when any case of interest comes along, a consultation with one of these gentlemen and the dental surgeon takes place. This, in my opinion, is how it should be.

And now, gentlemen, I have finished. I thank you not only for the honour you have conferred on me, in asking me to read a paper before this Society, but also for your patience in listening to it. If I have said more about dentistry than medicine and surgery, you must forgive me.

THE TREATMENT OF DEAD TEETH.*

By E. Balding.

Mr. President and Gentlemen,

If any apology were needed for choosing such a well-worn subject as that of "Dead Teeth" for our discussion to-night, I offer as such my reasons for doing so, viz., the great number of such teeth we are called upon to treat, and the immense, and to the private practitioner, the vital importance of their successful treatment.

Dead teeth naturally fall into two classes, viz. :—I. Those whose pulps have been devitalized by the application of arsenious acid ; and—II. Those which have lost their vitality previous to coming under our care.

I. The teeth of the former class need not detain us long. Here we have to deal with a tooth, the pulp canal or canals of which can never be in a more aseptic condition, and provided the pulp is withdrawn successfully, and the canals properly filled, there is not the least doubt as to the result of our work. There is no class of teeth more favourable for immediate root filling than this, and almost invariably this is the best treatment to adopt.

The first step is to thoroughly open up the pulp-chamber so as to get direct access to the canals. In the case of interstitial cavities, this sometimes involves the cutting away of much of the crown of the tooth, and is easily effected with one of the new cross-cut burrs. Some operators advise, instead of extending these cavities, to make an entirely fresh opening by drilling straight through the crown into the pulp chamber, but there is very little advantage gained by this method, unless the bridge between the two entrances to the cavity is tolerably strong. Next, an attempt should be made to withdraw the pulp whole. This may be done by passing a very fine flexible watchmaker's brooch right to the extremity of the canal, and giving it one or two turns in order to sever its connection at the apex. Very often on withdrawing the brooch the pulp will come away with it, but if it does not, it may be secured by passing up a barbed Donaldson bristle, or other nerve extractor. Should this also be unsuccessful, use with the engine a very fine Gates-Glidden drill which has had the point of the blade broken off, and this seldom fails to entangle the pulp and bring it away.

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* A Paper read before the Students' Society, London Dental Hospital.

After cutting away all overhanging dentine from the canals, so as to make their orifices funnel-shaped, mop them out with absolute alcohol, or better still, a one per cent. solution of perchloride of mercury in absolute alcohol, and dry with the hot air syringe, or by inserting a piece of wire, made hot in the flame of a spirit lamp. There is no object, neither any advantage gained, but considerable risk run by enlarging the canal with a drill, except perhaps where the contents are partly calcified towards the proximal end. Having previously gauged the length of the canal by marking it on a brooch with a small disc of rubber dam, and the root being thoroughly cleansed and dried, we proceed to introduce the permanent root filling, and over this the permanent plug.

All this is simple enough, someone says, but what would you do in a case where the canals are so small as not to admit the passage of even a very fine bristle, as is commonly the case in the buccal roots of upper molars, and the anterior roots of lower molars? To this I reply that I should leave them alone. Of course the proximal end of such a canal should be somewhat enlarged to make sure that it is not a deposition of secondary dentine which is merely blocking the opening, and if it is not so, the canal may very safely be left with some antiseptic in the enlarged part. Some little time ago exactly such a case came under my notice. The patient had a carious six year upper molar, and on examination I discovered a slight exposure, to which I applied arsenious acid. The patient came again in two days, and on opening up the pulp chamber I removed the pulp from the palatine canal without any difficulty, but on looking for the buccal canals, I could only make out two very minute openings which would not admit more than the point of the finest brooch. I endeavoured to enlarge them, first with a Hern burr, and then with a drill, but as the obstruction continued I did not persist, but mopped out the cavity with perchloride of mercury, and inserted gutta percha points into the palatine canal, filled the pulp chamber with osteo and put in a gold plug. I saw this patient two days ago, and found that the tooth had not given the slightest uneasiness since it was filled. With these few words we will pass over the teeth of the first class.

II. The teeth of the second class—those which have lost their vitality previous to coming under our care—may be grouped into three subdivisions, which we will consider *seriatim.*

(*a*.) Under the first may be included those of which there is no history of alveolar abscess, but whose pulp has died either as the result of accident or disease. When this is the case, the contents of the canal will generally be in a state of putrid decomposition, and if the pulp chamber has been encroached upon by caries or otherwise, may be pouring out pus into the cavity. Sometimes when the pulp has died spontaneously without any obvious cause, it will be in a semi-liquefied condition, known as moist gangrene, or less often we may find it shrivelled up as in dry gangrene, and more rarely still it may seem to have disappeared altogether. But whatever may be the pathological state of such teeth, their actual condition is by no means as favourable as that of the class we have just considered, and in their treatment it is impossible to exercise too much care. Proceeding as before, we remove all loose debris, and clear out the canal as well as possible, working all the time in the presence of, and in the case of lower teeth, under a pool of some antiseptic, as creosote or peroxide of hydrogen, or a 1-250 solution of perchloride of mercury. The walls of the canal will probably be softened and soaked with the putrid contents, and now the Gates drill is called into requisition ; it should be fine, and used with a "touch-and-go" movement, continuing the use of the antiseptic, and with our gauge set on the drill, there should not be much fear of forcing any debris through the apical foramen. Now the canal must be thoroughly dried, and this is best done by mopping out with absolute alcohol, and then using the hot-air syringe, the alcohol having the power of dehydrating the dentinal tubes, and so causing them the more readily to take up whatever antiseptic be used. There are now two courses of treatment open to us, in the adoption of either of which we must be guided by a careful consideration of the circumstances of each individual case. If there has not been the slightest indication of periostitis, or any pain whatever, and there is no reason to expect an untoward result from any other cause, such as absorption at the root, etc., we might feel perfectly justified in permanently filling the root and tooth at once. But should the conditions not prove so favourable, or should any doubt exist in our mind as to the result of such treatment, there can be nothing lost by delaying the permanent operation, and inserting a dressing of eucalyptus oil and iodoform. This is I think preferable to carbolic and iodoform, because the eucalyptus dissolves the iodoform, and being very volatile diffuses itself into every space left unoccupied. The cavity is now filled with a plug of temporary gutta percha, and if at the end of a week the tooth has remained quite comfortable, the dressing may be exchanged for a permanent root filling, and a plug of gold, or whatever filling be most suitable, inserted. In cases where the patient cannot be seen again, and there has been slight periodontal irritation, caused no doubt by the presence of septic substance, Mr. Coleman recommends the following treatment:—Clear out the pulp cavity, wash out with carbolic acid, and lay over the opening a small disc of card saturated with carbolic, and having attached to the surface looking into the canal a small quantity of arsenious acid (about $\frac{1}{16}$ grain). This is covered over with oxychloride of zinc, and the remainder of the tooth filled with gold or amalgam.

(*b*). The second subdivision will include those teeth at whose root a blind abscess exists, or is in process of formation. Here our treatment may vary according to the stage to which the abscess has advanced. If it seems just beneath the gum, or if its actual position can be made out at all clearly, the treatment will be much simplified by anticipating nature by cutting down on or drilling into the sac from the gum over it, and treating as an abscess with a fistulous opening. If the abscess has not so far advanced as to warrant this course of treatment being followed, then the canal should be cleared as thoroughly as possible, and a loose cotton wool dressing with a little iodoform or perchloride of mercury inserted, and changed every day until it comes away clean and sweet. Some operators advise going through the apical foramen with a very fine drill so as to tear up the sac and draw the blood, and then putting in a dressing as soon as all bleeding or weeping into the canal has ceased. Although my experience has not been very great, I have found very good results follow this latter course of treatment in the few cases in which I have tried it; but whichever course is adopted, I should not advocate the practising of immediate root filling. Sometimes, however, by the force of circumstances we may be driven to adopt some immediate treatment, and the only one that occurs to me besides that of filling the root and treating the abscess externally, is that known as rhizodontrophy, which consists in capping over the pulp cavity, and at once filling the tooth; after which a fine hole is drilled either through the side of the tooth, just below and through the margin of the gum or through the filling itself into the pulp cavity. But in any case, as an aid to our treatment, the gum over the affected tooth should be dried and strongly and repeatedly painted with a mixture of equal parts of the double tincture of iodine and Fleming's tincture of aconite; in fact I deem it advisable to do this as a preventive after treating any tooth where there is any likelihood of inflammation being set up or increased.

(*c.*) The third and last subdivision comprises those teeth which are the subjects of an alveolar abscess, which having burst, has left a suppurating tract, opening generally at the summit of a pustule which is sometimes $\frac{1}{8}$ or $\frac{3}{16}$ of an inch long. Every now and again a small gumboil makes its appearance, enlarges, bursts and subsides for a while, only to reappear again and again. As a rule the patient experiences no pain from it, neither any inconvenience beyond that caused by the occasional liberation of the very offensive pus into the mouth. The majority of these cases are amenable to immediate treatment, which consists briefly in getting a few drops of some powerful antiseptic to traverse the whole length of the pulp canal and the sinus leading from its apex, and then permanently filling both the root and the crown. To my mind, the simplest and most satisfactory method of doing this is as follows:—Clear the canal as well as possible, and then cautiously but thoroughly cut away the immediate wall with a Gates drill; pass a very fine brooch up the canal so as just to force its point through the apical foramen, and then dry the canal. Now take the needle of a hypodermic syringe, and pass it as far up the canal as possible, without using force; pack tightly all round it with gutta-percha, and having filled the syringe with the antiseptic, screw it on to the nozzle which carries the needle, then with very little pressure we shall almost immediately see our antiseptic oozing out at the sinus on to the gum. The best antiseptic for this purpose is strong carbolic acid, because one can tell by the white eschar it makes when it has reached the gum, and also because being such a strong escharotic, it cauterises the coats of the sinus, and quickly causes it to heal up by granulation. Some prefer to use a less potent drug, as creosote, or peroxide of hydrogen, but when these are used it is necessary to allow a moderately good stream to pass through the channel before proceeding with the operation, and even then the cure is neither so sure nor so quick.

In the case of carbolic it is only necessary to let one drop appear on the gum to effect a cure. When this has been done, remove the syringe and the surrounding gutta percha, dehydrate the canal with absolute alcohol, mop out with perchloride of mercury, dry again, and insert the permanent filling both in the root and in the crown. If a hypodermic syringe is not at hand, a tapering piston may be made to fit the canal, by winding cotton wool tightly round a brooch, dipping freely in carbolic and using with a pumping action till the white mark appears on the gum. About six weeks ago I inserted a gold filling in an upper central that had an abscess at its root with a fistulous opening, having previously treated it in this way and filled the roots immediately with gutta-percha points, the result being entirely satisfactory. If the abscess is one of very long standing, a variable amount of absorption may have taken place at the root. Sometimes on extracting a tooth that has refused to yield to any other kind of treatment, we find that perhaps $\frac{1}{16}$ of an inch has disappeared from the apex in this way, and we shall be pretty safe in suspecting this to be the case in almost any tooth of this class, which does not seem disposed to yield to our conservative treatment, and then our only alternative is to attempt the radical cure.

About a year ago a case of some interest came under my notice. The patient, a man of about thirty, had an abscess in the lower jaw, and a sinus leading from it opening under the chin close to the symphysis. After enduring an intermittent discharge from it for three years, he came to this hospital and on examination it was found that the trouble proceeded from the right lower central, which was dead, but without the slightest sign of caries. An opening was made into the pulp chamber, and an attempt made to force some peroxide of hydrogen down the canal out on the chin, but without success, although there was considerable enlargement of the apical foramen, so a temporary dressing was inserted, and the patient seen every other day, the dressing being renewed each time. The discharge gradually lessened, and when it ceased the tooth was filled permanently. Since then there has been no further recurrence of the trouble, and the tooth which at first was loose has grown quite firm.

On the subject of root fillings a large field is opened to us for discussion, for the selection of a suitable filling is as important as it is an essential item in the treatment of dead teeth. Our one aim in filling a root is to effectually and permanently close the apical foramen, and so prevent the canal from becoming the receptacle of any bloody, serous or purulent exudation, therefore in stating the requirements of a good root filling I should place them in this order:—1st. That it should go the extremity, and this almost always necessitates its being solid; 2nd. It must be easy of introduction, and adaptation to the various conditions of shape and size met with in different canals; 3rd. It must be capable of being easily removed, should circumstances require. One writer, I believe Mr. Tomes, also adds that it should be antiseptic. Therefore a perfect root-filling may be defined as a solid substance that will penetrate to the apex of the canal, is antiseptic, non irritating and readily removable. The number of root-fillings in use are practically innumerable, almost every operator having his own particular favourite, and thinking it in his heart to be the only right one, and if it were possible to enumerate them all, I would not take up your time by doing so, but still a brief allusion to some of those in ordinary use might not be considered out of place here. From being conservative in our treatment of teeth, I think we too often allow ourselves to get conservative in the use of root-fillings. In the selection of our material, we should be guided by a judicious consideration of the circumstances and conditions of each individual case, and choose our filling accordingly.

Of all root-fillings I have used up to the present, the most successful and the one answering most nearly to all the necessary requirements is gutta percha in the form of fine tapering points. The method of using these is briefly as follows:—We will suppose that the canal has been cleared out, disinfected, and thoroughly dried, as it should be before the introduction of any filling, it is now freely mopped out with chloroform, or a solution of gutta percha in chloroform, and taking one of these points in the conveying forceps, dip for an instant into chloroform and plunge to the end of the canal. It is best to cut the points to the length of the canal previously by the use of our gauge. If there is a plenty of chloroform in the canal it is not necessary to dip the points in it, as then there is the greater chance of their going home. If the canal is large it will take two or perhaps more of the points, and when full allow two or three minutes for the chloroform to evaporate, and then condense with a nerve canal plugger, and proceed to insert the permanent plug with or without a floor of osteo.

Next, in order of merit, I should be inclined to put a gold or copper wire in conjunction with chloropercha. The wire is drawn out very fine, and the end made slightly tapering. The canal is freely wiped out with chloropercha and the wire inserted, having itself been previously dipped in the solution. Some consider this superior to the gutta percha, as it is stiffer and more likely to go to the extremity, but like the gutta percha, and, in fact, all other "points" it should be cut to the length of the canal as measured by our gauge.

Wood points, soaked in carbolised paraffin, may also be used in the same way, or in conjunction with oxychloride of zinc.

Shellac, mixed with a small quantity of wax, makes a very good filling. It is drawn out into extremely fine threads, with which the canal is filled, and the whole flooded with alcohol; as soon as they begin to soften more points are inserted till the canal is full. Iodoform wax on cotton wool is a filling that is used a great deal, and but for the difficulty, and even impossibility, to get it to go to the extremity in small canals it might be called a perfect filling. You are all familiar with the way in which it is used, so I will not take up your time by describing it, but I think the remarkable length of time it preserves its antiseptic power is worthy of note.

Another filling consists of paraffin placed in the orifice of the canal and melted in by passing hot bristles down. I have never had any experience of this mode of filling, but should think that it is only practicable in teeth in the lower jaw.

The oxyphosphate or oxychloride of zinc carried up on shreds of cotton wool with a bristle, is much recommended by some operators, but the great objection that it has is the difficulty of working, combined with the almost impossibility of getting it to the extremity, and when once up getting it down again; of course it is needless to add that it should be mixed very thin. Some discountenance the use of the oxychloride as being liable to set up irritation through the apex, while others prefer it because of its antiseptic properties.

Gold and tin foil being quite out of date and unsatisfactory in their use for root filling, I do not think it necessary to dwell upon them to-night.

A very fair filling is made of plaster of Paris, mixed thin with a one per cent. solution of perchloride of mercury. The canal is first wiped out with the perchloride and then the plaster coaxed up with a bristle or on shreds of cotton wool, but no time must be lost in this operation or the plaster will set before the canal is properly filled, and some minutes should be allowed for the plaster to harden before the permanent plug is introduced.

Amalgam is another filling that is patronised by a goodly number of operators, the only fault I have to find with it is, that once in it is a fixture and is practically impossible to get out. Sullivan's amalgam is the best to use for this purpose on account of its preservative, antiseptic, and hardening action, but before inserting, the apex of the canal should be closed with a scrap of gutta percha.

A mixture of tin and lead, made into points like the gutta percha, has been used sometimes, but not having had any experience of them I cannot say how they answer.

During the last year Mr. Tomes has introduced a new root-filling in the form of celluloid, such as is used to carry the sensitive photographic film. The *mode d'emploi* is as follows:—The celluloid is first cut into exceedingly fine strips, the canal having been thoroughly dried is mopped out with collodion, and one of the strips is taken in the plugging forceps, dipped into the collodion, and coaxed up the root, after which guncotton is carried up on bristles and packed in. This is very similar to the gutta percha points, with the exception that the celluloid is square at the end while the gutta percha is pointed, an exception which I think goes in favour of the gutta percha. The advantages claimed for this by Mr. Tomes, are that the strips so prepared have considerable stiffness, and are yet flexible and very tough, and also that they make an antiseptic and absolutely non-irritant filling.

Lastly, we have a number of wool dressings, which, although they make admirable dressings, are not admissible as permanent fillings, albeit they are sometimes used as such. These chiefly consist of iodoform and eucalyptus oil, carbolic, creosote, perchloride of mercury, and arsenic.

Iodoform and eucalyptus has been known to preserve its smell after being in a tooth several years, but carbolic and creosote lose their power after a short time. The use of arsenic has been recommended by Mr Coleman in certain cases because of its very powerful antiseptic property.

In conclusion, allow me briefly to recapitulate those points of treatment which are of prime importance. First, there is the free exposure of and direct access into the pulp chamber and the openings of the canals. Then the thorough cleansing, disinfecting, and dehydration of the roots, and finally their accurate and complete filling.

It only remains for me to thank you, gentlemen, for the patience with which you have listened to my desultory paper. I feel that I have done but scant justice to a subject on which volumes have been written by far abler pens than mine, but which is still the vortex of a whirl of interminable debating. I can only hope that what is deficient may be supplied by a lively discussion.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Ordinary Monthly Meeting of the above Society was held on the 2nd March. The President, Mr. S. J. Hutchinson, M.R.C.S., L.D.S.Eng. in the chair, and a full attendance of members. The minutes of the previous Meeting were read and confirmed.

Dr. A. W. W. Baker's (of Dublin) admission to membership was announced, and Mr. T. Maudsley Howkins, of Hull, was elected a member of the Society.

Mr. H. B. Gill, Upper Norwood, was proposed for membership.

Mr. Storer Bennett (on behalf of the Librarian) stated that two papers had been sent for the library of the Society, viz., the Calendar of the Pharmaceutical Society, and the October Number of the Transactions of the Odontological Society of Germany. He mentioned also (in his capacity as Curator) that two models had been presented to the Society by Mr. Bulkley Hughes, of Dumfries. One, an upper model showing two supernumerary teeth erupting in the palate. In this case it was stated by Mr. Hughes that a considerable amount of hæmorrhage attended the extraction of the teeth. The other model was taken for a boy aged fourteen, and showed a conical supernumerary tooth, which was also extracted. Mr. Storer Bennett, continuing, related the particulars of a case of alveolar abscess of three years standing, and remarked that it was exceedingly interesting and instructive. It was that of a root of an upper lateral incisor which was under treatment for four years, more or less. The case forcibly illustrated the disastrous consequences which may supervene from cleaning out a root canal with a drill which is not properly directed, owing to the risk of piercing the wall on one side or the other. In 1886 the patient, a young lady, then about fifteen years of age, had a cavity on the palatine surface of a right upper lateral incisor filled. About a year after a sinus formed and pointed opposite the apex of the tooth. The dentist whom she consulted then removed the filling, enlarged the root canal with a drill, and filled the canal with gutta percha. This made matters worse, for a second fistula formed and discharged through the gum below the first one. The patient therefore went to another dentist, who removed the gutta percha, but without giving relief. She thereupon went to a third dentist, who very confidently expressed himself capable of treating the case. He, however, treated it on alternate days for six weeks without any signs of the discharge getting less. He then suggested that a London dentist should be consulted, which was done. The London dentist stated it as his opinion that the discharge was not in any way due to the abscess at the end of the root, but suggested that possiby there had been a perforation ; a suggestion which an examination of the specimen would show to be correct. A short time after this the patient had occasion to see a surgeon about her throat, and he said its condition was not due to the teeth. The patient was now recommended to have the tooth removed, but after the unsuccessful attempts to give relief, extending over three or four years, she was not at all willing to consent to have the tooth extracted, but she ultimately did so, when it was discovered that the drill had been directed too far forward, and had pierced the anterior wall, while the plug of gutta percha with which the root had been filled had been driven through the foramen, and it was due to this that all the subsequent mischief had occurred. The specimen (handed round) spoke for itself, but Mr. Storer Bennett thought that in addition to the importance of not using a drill which would cut a channel for itself, but rather an augur drill, the case should impress upon them the necessity of not too readily assuming that a case is easy of treatment, especially when it has already been under the care of somebody else, who in all probability has given it thoughtful attention.

The PRESIDENT said that with regard to the casual communication of Mr. Storer Bennett, it would facilitate discussion if the specimen were handed round, and any remarks deferred until after the specimen had been seen. In the meanwhile he would call upon Mr. Ackery for a casual communication.

Mr. J. ACKERY said that in bringing forward the two or three cases to which he was about to call attention, he was afraid he was doing so without being able to give any very distinct history. The previous history had not been well known, but that fact in itself gave the greatest scope for discussion as to the causes of the abnormalities.

In the first instance the model he wished to show was that of a lad aged fifteen or sixteen, in which the right lower first molar had become impacted, remaining on a lower level than the second molar. His object in bringing the case before the Society, was to get hints as to its probable cause. The puzzle was how a six year old molar could become impacted in this way. In his experience it was unique. The tooth was carious at its posterior aspect, and as the patient had not got his wisdom teeth, Mr. Ackery thought it best to remove the misplaced tooth. This he did, and the wisdom tooth afterwards erupted, very nearly in the position of the second molar. Another case quite inexplicable to his mind, was that which occurred in a member of his own family. The second upper molar had never come down to its true level. The first molar was tilted forward. There had never been any irregularity in the lower teeth to account for the position of the upper, and it had occurred to him whether there was gemination at the roots.

The third case was that of a medical man, in whose mouth the right upper second bicuspid was only partially erupted, high above the alveolar border in the sulcus. The tooth showing signs of caries, and being quite useless, Mr. Ackery thought it better to extract, before the presenting portion became broken down. On removal the root was found to be of less than half the normal length, and quite flat and even. (The tooth was shown.) Mr. Ackery said the appearance of the end of root was not like an ordinary absorbed surface, it was certainly not fractured, but might possibly be due to some interference with complete calcification. The specimen he hoped to have microscoped, and shown at some subsequent meeting.

The fourth case was simply an upper model, shewing both temporary and permanent canine, simultaneously present on either side of the mouth, and in the true arch, but on the right side the bicuspids were rotated, so that their long axes were antroposteror, and they were lying side by side, one being lingual and the other labial.

Mr. David Hepburn, being called upon by the President, said that he did not propose to occupy the time of the Society for more than a few moments, but very often in ordinary practice some contrivance suggested itself which proved to be a convenience, and which, when used, after a time became indispensable. The dressing stand (shown) was devised so as to form a convenient receptacle for small quantities of drugs for daily use ; it was circular and pyramidal in form, and revolved. It consisted of three tiers, reduced to the smallest possible dimensions consistent with utility. The lowest tier was provided with a number of small boxes for amadou, gutta percha pellets, bibulous paper pellets, and so forth. The second tier contained receptacles for bottles without necks, and with covers on hinges. The third tier was for the spirit lamp. Mr. Hepburn suggested that for the purpose of readily recognizing the whereabouts of the particular drug desired to be used, the bottles might be of different colours ; thus pink might be associated with carbolic acid, and green with arsenic. This plan might also be extended to the bibulous paper pellets. He had found the arrangement of considerable use himself, and therefore ventured to bring it before the Society.

The President mentioned that Dr. Scanes Spicer had been good enough to bring two patients for them to see, and as it would be necessary to see them in a darkened room, perhaps it would be convenient to do so at the close of the meeting. Mr. Ashley Barrett had also brought a patient, showing a case of double dislocation of the jaw, and he would call upon Mr. Barrett for his communication in connection with it.

Mr. Ashley Barrett said that the patient presented herself at the out-department of the London Hospital about three months ago, and complained of almost complete inability to open her jaws. There was considerable pain on the left side of the mouth in the neighbourhood of the wisdom teeth. Mr. Barrett opened the mouth, under chloroform, with a screw opener, finding it necessary to use only a moderate amount of force. He extracted the molar—a certain amount of inflammation was going on round it, and in the neighbourhood of the masseter muscle. In January the patient come again to the hospital, and said that every time she opened her mouth the jaw clicked, and on examination, apparently the condyle of the inferior maxilla slid over the articulatory prominence, and when she closed her mouth again the dislocation on both sides was reduced. She said it all but entirely prevented her eating. There was a good deal of pain, and the clicking noise produced constant headache. The points upon which Mr. Barrett would be glad to have the opinions of members were, first, the cause of the dislocation, and secondly, the best mode of giving relief. With regard to the cause, it seemed to him to be a somewhat obscure matter. On consideration Mr. Barrett thought three possible conditions might have caused it. The patient was a young woman of loose fibre, aged 24, and complained of clicking in every joint. The right shoulder joint dislocated, and the left knee. It occurred to him that possibly she might be affected with rheumatoid arthritis, which sometimes affects the jaw; there might be, accompanied with this, a growth of bone about the glenoid cavity, which might be the cause of the pushing forward of the lower jaw. Mr. Barrett was not quite clear in his own mind whether complete dislocation existed. The second suggestion was that possibly, though he was not conscious of it, he might, in opening the mouth with the mouth opener have done some violence to the capsular ligaments. The third possible cause which occurred to him was that possibly the capsular ligaments might have wasted and become very lax, the external pterygoids might also act in an inco-ordinate manner, and they might draw the condyles forward. Mr. Barrett could not account for the condition, except on one of those three hypotheses. As to relief, it occurred to him that this slipping of the jaw might be prevented by mechanical means, and for this purpose he had constructed a head-cap with bands which connected it with a chin-cap, made of vulcanite, so that a constant traction might be exercised on the jaw, and he was hopeful that by continued action, the condition might be improved. Further, he might mention that the patient had no front teeth, a circumstance which he proposed to utilize by making a strong metal plate, with rather long upper incisors, which he hoped would prevent the jaw slipping forward.

The President remarked that they seemed now to have a considerable amount of matter to discuss. Perhaps it would be better if any members had remarks to make on Mr. Storer Bennett's case, that they should be made now.

Mr. W. H. Coffin wished to say that about a year ago a lady came to him under almost similar conditions to those described by Mr. Bennett, the only difference being that the lateral incisor root carried a pivot and an Ash's tube tooth on a gold pin. Every effort to alleviate the discharge failed, and Mr. Coffin extracted the root with the pivot, and found as he had expected that there had been a perforation, in almost the same position as in Mr. Bennett's case. The gold pivot protruded about $\frac{1}{32}$-inch. After removing the pivot and making the root smooth on the outside, he replanted it and it became perfectly firm. Mr. Coffin afterwards mounted a Logan crown on the root and the case was doing perfectly well. He mentioned this case because it would encourage them to extract and replant a similar tooth.

Mr. F. J. Bennett commenting upon Mr. Barrett's case, said that it scarcely would appear to be a true case of dislocation of the lower jaw. It seemed to him to be more a gliding forward movement on the condyle and was probably due to the relaxation of the ligaments and increased by constant repetition. Probably if such a splint as Mr. Barrett had suggested were rigorously applied for a few months, it would restore the jaw to a proper movement. In such cases he believed the explanation was that the condyle was unusually flat, and the glenoid cavity unusually shallow. In such circumstances it was not rare to find a little forward movement of the jaw, but not a true dislocation. With regard to Mr. Ackery's case, from his description it reminded Mr. Bennett of a case he had seen in private practice. The first lower molar was impacted between the second lower molar and bicuspid in front ; this was exposed and of such a curious shape that Mr. Bennett thought it was a denticle, but he found on extracting it that it was an ill-formed tooth with a conical fang. Mr. Bennett believed that it had been pointed out by Tomes and others that the position was largely due to the growth of the fang, and therefore he concluded in his own case that in consequence of the fang being much dwarfed and conical, it had been overtaken by the second molar and bicuspid, and once being behind in the race had been held out of position by the other teeth.

Mr. F. Newland-Pedley expressed his agreement with Mr. F. J. Bennett as to the nature of Mr. Barrett's case. He did not for a moment think it was a case of perfect dislocation. He had the pleasure to exhibit a model of the mouth of a man, aged twenty-four, who inherited syphilis. When about six years of age he got necrosis in the palate, and about four years afterward he erupted a tooth.

Mr. W. H. COFFIN then exhibited a paper disc with a peculiar central perforation, the invention of Dr. J. A. Kimball of New York, consisting of a combined slit and hole allowing the flat head of a screw mandril to be passed through bodily, without the necessity of completely removing the screw from the mandril.

Dr. JOB COLLINS then read a paper on

"ASSOCIATED AND RELATED OCULAR AND DENTAL DISEASES."

Bain had observed "Nowhere more than in medicine may laws of causation be defeated ; there is rarely such a thing as a simple cause yielding a simple effect." Power had indeed stated his belief in a causal connection between phlyctenular ophthalmia and carious teeth, but on another page he recognised the ambiguity of such a conclusion, owing to the extreme frequency with which dental affections present themselves. Statistics then, said Dr. Collins, seem of little avail, and a deductive method of proof and judicious empiricism seemed the only resort. On the other hand Hutchinson from an examination of 102 cases of interstitial keratitis was able to arrive at the induction that the disease was due to inherited syphilis, and was very frequently accompanied with a characteristic physiognomy and definite irregularity. The same author's demonstration of the remarkable concomitance of laminar cataract, defective enamel, especially of the first molars, and Arlt's connection of the former with infantile convulsions, were not less suggestive of some underlying relation between ocular, dental and general aberration. Bearing in mind the destination of the whole of the 2nd, 3rd, 4th, 6th and parts of the 5th and 7th cranial nerves, together with the sympathetic to the eye and orbital contents, eyelids and muscular appurtenances, and the associated rich innervation of the teeth by the other two large sensory divisions of the great trigeminal nerve, it was impossible to fail to appreciate the opportunity of inter-communication afforded. Accepting the truths which physiology teaches of relaxation, transference, radiation and so-called "sympathy," there seemed an *a priori* probability that in certain circumstances conditions must arise in which afferent impulses ascending the dental nerves should manifest divers sensory and motor phenomena, in the complex system composing the organs of vision. There were affinities developmental, histological and general between the eyes and teeth, which must not be lost sight of when taking a broad view of the two factors whose interaction was to be investigated developmentally; an analogy by no means fanciful might be found in the fact that with the eyes, as with the teeth, an epiblastic invagination co-operated with a vascular mesoblastic intrusion in the genesis of the organ. A liability to sympathetic tendencies and lesions might thus be laid at the outset. The connecting link of non-vascularity of the dentine and enamel and cornea and lens was worthy of remark. The correspondence of the two sets of phenomena might be less true in point of time than in essence, and in their later life histories there was little of analogy between the cyclic changes of the two dentitions, and the age changes which eventuate with the eyes. Prefacing a citation of cases with the remark that the indirect class, especially such as were recorded before the days of the ophthalmoscope, and before Donders demonstrated the pathology of concomitant squint—*i.e.*, before the sixties—were of little value. Dr. Collins referred to the case quoted by Sir. Wm. Lawrence from Galenzanski, spoken of by Mr. Power as the most brilliant and complete on revord of reflex amaurosis from irritation of dental branches of the fifth. It was the case of a man aged thirty, in whom a splinter of wood perforated the fang of the first left upper molar which was carious; swelling and pain of the cheek on that side occurred, and later on mydriasis and blindness, which was said to have been complete; this lasted a twelve month, and when the cause was detected by Galenzanski and the tooth with the splinter removed, restoration of sight quickly ensued. The effect of an orbital cellulitis directly upon the optic nerve, and the striking and rapid improvement of sight after evacuation of inflammatory effusion, was well shown in a case recorded by Mr. Critchett. Dr. Collins stated that cases of definite ocular disease for which a dental cause could be satisfactorily established were very decidedly rare. He had searched the ten extant volumes of the Ophthalmological Society in vain for a clear case of the kind classed in his second group. He found a case of fatal orbital cellulitis resulting from periodontitis and necrosis of jaw, and one of associated neuralgia or anæsthesia of the fifth, with ocular troubles; but no reflex amaurosis or phlyctenular ophthalmia, or glaucoma or ophthalmoplegia, or failure of accommodation attributed with any assurance of proof to dental lesion. Mr. Power's comprehensive paper, which laid under contribution most of the available literature on the subject up to that date, yet only contained two detailed cases which had come within Mr. Power's own experience. One was a young woman with neuro-paralytic ulcer of the cornea ; she had corneal anæsthesia and ulceration with hypopyon, and though there was some improvement after taking out some teeth, yet the eye subsequently had to be abscised. The other case was one of double glaucoma in which a cystoid cicatrix followed each iridectomy, and both eyes were lost. She had had toothache, and an abscess was always found to exist at the root. Mr. Power did not seem either to suspect or assert dental cause in this case, nor did more extended knowledge of the pathology of glaucoma since acquired, suggest it as likely. Indeed Mr. Priestley Smith by measuring the tension of the eye in cases of toothache at the Dental Hospital, found no reason for thinking that toothache affected ocular tension, and though his number of observations were but few, yet there seemed good ground for his conclusion, "That the part played by ordinary forms of facial neuralgia in glaucoma is not of primary importance."

In the discussion which followed Mr. Power's paper, Dr. Collins was only able to find records of eight cases of oculo-dental lesion contributed by the sixteen speakers. Mr. Smith Turner related a case of amaurosis from antral abscess. Mr. Charters White mentioned a case of keratitis with a carious bicuspid. Mr. Coleman brought forward a case of amaurosis from pivoting a left upper central, and added that conjunctivitis was the commonest ophthalmic trouble resulting from dental irritation. The amaurosis case seemed to be the same as elsewhere referred to, and it was stated by Mr. F. J. Bennett on the authority of Mr. Lawson, that the ocular trouble was iritis, and in no way due to reflex dental irritation. Mr. Spence Bate related a case of neuralgia in the eye relieved by the removal of carious upper molars, and three or four other speakers quoted cases in which ocular and dental troubles were supposed to be more or less related to each other. Dental surgeons were evidently on the alert for cases of the kind to which Dr. Collins was referring, yet the records of the transactions of the Odontological Society were few and far between. Mr. Henry Sewill had related and reproduced in his "Dental Surgery" a most interesting case of spasm of the obicularis, neuralgia and cataract, apparently due to tender, carious and much neglected teeth on the same side. Appropriate treatment of the teeth cured the spasm and neuralgia, but of course not the cataract. Having quoted other cases, both from his own case-book and other sources, Dr. Collins proceeded to say that he had never seen a case of glaucoma, acute or chronic, which appeared to be in any way caused by disease of the teeth; the neuralgia of the head and cheek was common enough in such cases. He remembered a case of intense supra-orbital neuralgia, which was puzzling; later, however, the neuralgia gave way to total anæsthesia over the area of distribution of the supra-orbital nerve. On deep pressure, a lump was felt, evidently involving the supra-orbital nerve trunk, this was removed, was as large as an almond, and was composed of granulation tissue; there was a history of syphilis, and it was possibly a node. Dr. Collins had paid a good deal of attention to failure of the accommodation, and, notwithstanding the statements of H. Schmidt, he much doubted whether dental neuralgia had any other effect in this direction than that of general depression, and consequently, as with so many other deflecting causes, as blood losses, the puerperal state, hyper-lactation, convalescence from exhausting fevers, in a measure restrict the range of accommodation. In sixteen persons suffering from toothache tested by Dr. Priestley Smith, fifteen had no anomaly of accommodation. Nor did Dr. Collins think paralytic affections of the external or internal muscles of the eye or lids were often, if ever, traceable to dental disease. A reflex paralysis presented some physiological difficulties, and a reference to "inhibition," which seemed to imply some normally exerted motor influence, did not elucidate the matter to his mind. He felt obliged to confess to scepticism as to the satisfactory demonstration of cases of reflex amaurosis arising from irritation of the dental nerves, apart from direct extension of inflammation through the maxilla. Such cases became more frequent in literature as the student receded into pre-ophthalmoscopic and less critical times, and became rarer and seemed to disappear when they were most vigilantly enquired for. The deep origins of the optic nerve, though not precisely determined, would appear to be far removed from the fifth, and the path of such reflex amaurosis proportionately circuitous and improbable. Of associated ocular and dental lesions, such as keratitis and notched teeth, and lanular cataract and "rachitic" teeth, every ophthalmic surgeon had abundant instances at hand. But it was curious to notice how often many who should know better appeared to confound the normal triple denticles which the permanent incisors exhibit normally when first cut, and which often remain some years before they are ground down with Hutchinsonian notched teeth of hereditary syphilis. It is, Dr. Collins submitted, by the defective enamel of the central denticle causing this to be broken away that the notched appearance results, and he exhibited a photograph which served to illustrate this process.

The PRESIDENT said, with reference to the paper which Dr. Collins had just read, he was quite sure he was only expressing the unanimous feeling in thanking him for his extremely valuable contribution. If this iconoclastic paper had smashed their idols, they must accept their fate and not so hastily jump at conclusions which some appeared to have done, he (the President), amongst the number.

Mr. F. J. BENNETT said, with reference to Dr. Collins's allusion to the case which occurred while he (Mr. Bennett) was a student at the hospital, and which caused some interest at the time as to the doubt expressed whether or not it was a true case of reflex amaurosis, the case was one in which the patient having a lateral tooth pivoted, suffered from iritis. It was due to the pivoted tooth that she was first taken to the hospital, and seen by Mr. Lawson himself. Mr. Lawson expressed himself in most decided terms as to the iritis being in no way of dental origin. Mr. Coleman was of a different opinion, and had expressed his opinion on more than one occasion. Mr. Bennett had always felt it his duty to put this fact on record, whenever this case was put forward as an example of a connection between amaurosis and dental trouble. It should be remembered that this case was seen by no other ophthalmic surgeon, a fact which he thought should be noted ; he believed Mr. Tomes had expressed himself in a guarded way, and he classed it among doubtful cases.

Mr. ALBERT mentioned, as illustrating the difficulty of tracing the relation between cause and effect, the case of a little child of his acquaintance, aged about seven or ten, suffering from ulceration of the cornea. She was taken to one of the first oculists in London, and he treated her in the orthodox way. After three or four months, as the ulceration did not clear up, she consulted Mr. Power, who attributed the lesion to a temporary molar ; this was extracted and the ulceration disappeared.

Mr. C. S. TOMES wished to say one word about a case Dr. Collins had alluded to, seen by Mr. Critchett. A case of repeated attacks of cellulitis, coincident with which there existed a peculiar condition of the mouth. It was a remarkable case ; the patient was very bad indeed, and seemed almost to be dying. There was never any suppuration, only serum. The teeth were very stunted from a girl, and there were very few permanent teeth. Those that she had were very stunted, pointed, peglike sort of teeth with hardly any enamel, and they were erupted to a very small extent only. But on no occasion upon which he saw the patient, was there any inflammation about the necks of the teeth, though he did not see her quite in the first instance. Some of the teeth which were removed were sound. The recurrence of the cellulitis, and dental pecularities, did not suggest cause and effect, but rather concomitant conditions. He could not, in his own mind, connect the condition as cause and effect, nor could he think of any case like it. But there they were, the very stunted teeth cut long after the normal period, and at long intervals. It did occur that cellulitis was coincident with the cutting of the teeth. But there was no abscess or inflammatory condition.

Mr. W. A. HUNT, Yeovil, remembered being present when Mr. Power read his most interesting paper. It was a paper which produced a suspicion that there was a connection between conditions of the eye and of the teeth. He thought Dr. Collins's sceptical paper would induce the dental profession to examine very carefully the evidence brought forward in support of any supposed connection between diseases of the eye and teeth. Dr. Collins's paper had been read in post-ophthalmoscopic, not pre-ophthalmoscopic times, and Mr. Hunt thought that there existed now more than ever a very strong suspicion of the connection between certain dental and ophthalmic conditions. They might not have all the evidence that Dr. Collins required, but as he had said eight years ago, he hoped that careful notes would be taken of any cases affording grounds for supposing a relation of the one and the other, so that the details might give something definite, and no mere hypothesis to work upon. He believed, and he was speaking from his own experience, that there *was* a connection between certain diseases of the eye and teeth. When surgeons were found removing one eye lest the other might be affected ; when constitutional and local disturbances were shown to be related to each other, he could not help thinking that there might be a connection between functional disturbances of the eye and diseases of the teeth.

Mr. F. J. Colyer wished to mention a case of slight corneal ulcer treated by Mr. Power of Westminster Ophthalmic Hospital, without success. In the temporary molar there was a fig pip which was pressing on the exposed nerve. On removal of the tooth the corneal lesion got well.

Mr. Morton Smale thought that dentists were a little inclined sometimes to jump at hasty conclusions, and that they should therefore be very much indebted to Dr. Collins for breaking up some of their idols. After Mr. Power's paper, Mr. Smale began to think he had been very neglectful in failing to observe related conditions between the eye and teeth. Shortly after, a colleague at Westminster Hospital sent him a case of glaucoma in which there were some decayed stumps on the side of the glaucoma, of which he thought they might probably be the cause. After Mr. Power's paper, Mr Smale thought so too, and he accordingly removed the stumps. Things went on very nicely indeed for about a year, when he saw his patient again, and congratulated him on the cure of the glaucoma ; he had hardly done so when the glaucoma recurred. This case had hardly left him, when an almost similar one was sent him by a fellow student, who thought the glaucoma might be due to the decayed teeth, but in spite of the removal of these teeth by Mr. Smale, and putting the mouth in good order, the glaucoma continued, and the patient had finally to be operated upon.

Mr. Paterson after expressing the pleasure with which he had listened to the paper, notwithstanding it had bowled over their idols, alluded to the obvious nervous connection between the eye and teeth, in view of which, he said, irritation of either might be expected to affect the other. He mentioned the case of a superior canine the pulp of which was dead, and the tooth so much decayed as to have little more than the stump left, which had been subjected to abscesses ; this was attended with severe lachrymation on the same side, but the lachrymation disappeared on the removal of the stump. Another case was that of a supernumerary bicuspid-like tooth, carious and abscessed, also attended with lachrymation, which vanished on extraction of the tooth. Mr. Paterson in conclusion urged the importance of ophthalmists co-operating with dentists in recording and comparing the treatment and result of cases.

Dr. COLLINS briefly replied.

Dr. SCANES SPICER's two patients were then examined in a darkened room. One a male and the other a female, were each suffering from empyema of the antrum on one side of the face only, the other side being healthy. A small incandescent electric bulb having a reflector which projected the light upwards was placed in the mouth, which was then closed. The external translucence of the healthy side of the antral region was very decided, more particularly in the neighbourhood of the canthus ; but on the side where the infiltration existed there was no illumination.

The usual votes of thanks concluded the meeting.

Students' Society, London Dental Hospital.

ORDINARY General Meeting, held February 9th, 1891, E. LLOYD WILLIAMS, Esq., President in the chair. The minutes of the previous meeting were read and confirmed.

Mr. MAY proposed the following gentlemen for the membership of the Society :—Messrs. V. L. Hope and Fennings.

The following gentlemen having signed the obligation book were admitted to the membership of the Society :—Messrs. F. E. Watson, H. E. Bullen, A. Dodson, B. A. Castellotte, H. W. Trewby, L. A. Austen, S. H. Hayward.

On casual communications being called for, Mr. ALLIN showed a model of a misplaced upper bicuspid and canine in a female patient, aged 23.

Mr. COYSH showed a model of well-developed Hutchinsonian teeth, and wanted to know why it was that in these cases the bite was nearly always edge to edge.

Mr. BULLEN showed a model of a second bicuspid which was placed close to the second molar, probably due to the too long retention of the temporary second bicuspid.

Mr. CASTELOTTE showed an upper model with two laterals on each side, and also one of a girl with no laterals or canines in the upper, and no bicuspids in the lower. The patient, and also her mother, whose teeth were in the same condition, had had small-pox, measles, and scarlet fever when young, while a sister, who had had none of these, possessed normal teeth.

Mr. Parris showed a full lower impression tray with clips, which being attached converted it into an interrupted tray.

Mr. Colyer showed an upper model with two laterals on each side ; on one side there was a large tooth in front, and a small one behind, with the converse on the other.

Mr. May mentioned a case of a soldier who complained of pain in an upper molar, the teeth all being sound ; the tooth was sensitive to percussion, and on taking it out and splitting it, he found a partly calcified pulp.

The President then read his Inaugural Address, and then called on Mr. E. Balding for his paper on " Dead Teeth and their Treatment." (See page 159).

In opening the discussion Mr. Seymour asked Mr. Balding what he would do in the case of a central incisor which, whether dressed for the first time or not, always bled, the canals being sound and not perforated. He had met with two or three such cases and they had always bothered him a good deal.

Mr. J. P. Smith did not agree with Mr. Balding about putting in a gold filling at once, he preferred putting in a soft filling for five or six months first. In cases of abscessed teeth, he drilled out the canals and mopped them out with creosote and iodoform, and left only a plain cotton wool plug in, which he directed the patient to change after meals, and thus letting the abscess drain. For permanent root filling he preferred gutta percha points used without dipping in chloroform.

Mr. Colyer thanked Mr. Balding for his paper. He thought it would be a great advantage if everybody took notes of root fillings, and the after history. In the case Mr. Seymour mentioned he would perform rhizodontrophy. With regard to the kind of filling to be put into a tooth, he thought it did not much matter, and would just as soon put gold as anything else. To remove a nerve after it had been devitalized he used a large Donaldson's bristle. He thought really the best root filling was a fine wire in gutta percha solution ; he had lately seen a root filling of cotton wool and creosote, which lasted fifteen years.

Mr. Coysh thought that not enough stress was laid on removing debris from the canals, and that the Gates-Glidden drill was used a great deal too often. Immediate root filling was in his opinion best, as you did not run so much danger of introducing septic matter.

Mr. HARSANT, in reference to what had been said with regard to the value of collective investigation, reminded those present that a short time back Mr. Dolamore had prepared a number of forms, on which to record details of cases of alveolar abscess, which could be obtained from the Librarian of the Society. He thought the pain occasioned by forcing hard gutta percha points to the apex of the root, was due to the too vigorous application of the vis-a-tergo. He would have liked to hear from Mr. Smith if the pain ever persisted. He could not agree with Mr. Colyer about putting in a gold plug as soon as the roots were filled, but preferred to wait five or six months. With regard to what Mr. Balding said about the effect of carbolic acid soon passing away, Dr. Miller, in his recently published paper, placed it among the most permanent of antiseptics. It was very important not to be too vigorous at the first dressing, as if septic material once got beyond the apex, mischief was sure to follow.

Mr. PREEDY objected to the term "dead teeth," and thought "pulpless teeth" would be much better. He advocated making a separate opening to get at canals, especially in those cases exposed by erosion, and thought that the cavity should be fully prepared before treating the canals. He considered the antiseptic properties of arsenious acid very much overrated, Dr. Miller in his table placing it below eucalyptus and carbolic acid. For filling canals he advocated gutta percha points for fine canals, and wood points with an oxychloride for large roots where the pulps had perished from disease, but used oxysulphate on wool or with wood points in those cases devitalized by arsenious acid.

Mr. MAY advised the use of the drill in all cases to make the canals round, and so facilitate the introduction of the filling, and in old cases to remove the septic dentine lining the canals, and then to insert osteo and iodoform.

The PRESIDENT remarked on the value of collective investigation, and suggested a certain number of gentlemen should record all the root fillings they did, with the result. He then called on Mr.

Balding briefly to reply, it being past the usual time for closing the meeting.

Mr. Balding, in reply to Mr. Seymour, said he remembered a lower molar, in one of the roots of which he was unable, after trying for half an hour, to stop the bleeding. He inserted a filling of iodoform, immediately after withdrawing a plug of cotton wool, and the tooth had not given any trouble since. In reply to Mr. Smith, he quite agreed that in the case of a tooth with a blind abscess, he should leave a loose antiseptic dressing in, changing it every day. The use of chloroform made the gutta percha points slide up easily, and also made them stick to the canal. With regard to what Mr. Colyer had said, it was very difficult to find out the result of cases in hospital practice, as patients went away and very likely were never seen again. In reply to Mr. Coysh, he quite agreed with him as to the importance of carefully removing all debris from the canal, and quite intended to have alluded to it in his paper. In reply to Mr. Preedy, he did not advocate leaving arsenic in a canal, but merely mentioned it on the authority of Mr. Coleman. If he found the gutta percha points too small, he made them himself. To Mr. W. May, he thought the chief object of filling roots was to close the apex, and did not think it of much importance how the canal was filled so long as this was done.

The President then proposed a vote of thanks to Mr. Balding for his paper, and to those gentleman who had brought forward casual communications, and announced the next meeting would be on March 9th, when Mr. C. S. Reed, would read a paper on "The Methods of Retaining Artificial Dentures in the Mouth."

The proceedings then terminated.

OBITUARY.

We regret to announce the death, after ten days' illness, of Mr. E. G. Weeks, Surgeon Dentist, who died of pneumonia and heart disease at his residence, Barton House, Bristol, on February 12th.

APPOINTMENT.

Sibley W. Read, L.D.S., R.C.S.Eng., has been appointed Dentist Surgeon to the Metropolitan Hospital.

THE DENTAL RECORD, LONDON: APR. 1, 1891.

THE REGISTERS.

A SENSE of security has been said to be one of the most deadly of narcotics. When the occasion requires men to be prepared for an instant invasion there is far less fear of such an incursion taking place as when lulled to sleep by the oft reiterated cry of the watchman—"All goes well, and a fine night!" The same trope applies in no small measure to the dental profession and the Registers, things have been going well, and men's minds are nowadays lulled into a sense of drowsy contentment as regards registration, which is wholly prejudicial to the well-being of what may be called one of the bulwarks of the dental polity—we mean the Dental Register. The machinery of registration is doubtless very much better than heretofore, and many of the old inaccuracies have been expunged, but those who are responsible for the work know only too well how much they are dependent upon local sympathy and local aid to effect a complete absence from error, omission or redundance in its columns. In every case freshly qualified men should be urged to register at once, and in every case of removal due notification should be given to the Registrar. Deaths of qualified men do not somehow seem to be reported as they should be, and strict supervision should be kept to insure removal of names from the Register of all persons who have died, and this could easily be done if the professional men in a town or village made it their business to inform the Registrar of such deaths. Various alterations and improvements are to be noted in the present year's Registers, notably the earlier date of issue, and no small praise is due to the Registrar for the energy and determination displayed in effecting this and other beneficial changes. The Register, in 1876 (the first time such an estimate was made), contained 22,200 names; it now contains the names of 29,163 qualified medical practitioners—an increase of 7,163 names—of whom 62.41 per cent. have been registered in England, 21.87 per cent. in Scotland, and 15.72 per cent. in Ireland. During the year 1890, 1,266 new practitioners were registered, viz., 637 in England, 462 in Scotland, and 167 in Ireland, a number slightly over the average for the last fifteen years, which is 1,205. The number of names removed in consequence of reported deaths and other causes has been 556. For the first time the Medical Register contains a separate Colonial Register, appended in accordance with the provisions of the Medical Act (1886), which gave power to the Medical Council to recognise qualifications conferred in Colonies, to which, by direction of the Privy Council, the operation of Part II. of the Act has been extended. The list of such Colonial qualifications now registrable includes those of the Universities of Melbourne, Sydney, and New Zealand. The Dentists' Register shows that there are now 4,817 names of dentists qualified to practise. The number that appeared in 1879 (the first Register) was 5,289, thus showing a decrease since that date of 472. Of the total remaining number, 76.32 per cent., or 3,676 practitioners are registered as having been "in practice before July 22, 1878," as against 90.87 per cent., or 4,806 practitioners so registered in 1879. The numbers thus registered have shown a steady and continuous diminution, while, on the other hand, the numbers of licentiates in dental surgery have shown as continuous an increase, from 9.13 per cent., or 483 practitioners in 1879, to 23.36 per cent., or 1,126 practitioners in 1891. The Medical Students' Register reveals the fact that 1,846 students were registered during 1890, viz.: 974 in England, 643 in Scotland, and 229 in Ireland. The numbers passed by the various examining bodies are also given, and they afford food for reflection. Whether the Registrar will at some future time see his way to making a supplement of names of practitioners, arranged under the headings of the towns or districts in which they practise, remains to be seen. Such a local list would be most valuable both to the Registrar himself, who would find far less difficulty in detecting errors or obtaining local information, and also such lists could be used for the public protection as showing the legitimate practitioners belonging to each town or district.

Dental News.

ROYAL COLLEGE OF SURGEONS, IRELAND.

Licence in Dentistry.—Regulations.

All information concerning the Licence in Dentistry may be obtained from the Registrar of the College of Surgeons, who will receive the applications of Candidates for permission to be examined. The Bank receipt for fees, together with all certificates, &c., are to be lodged at least fourteen days prior to the day fixed for the commencement of the Examination for the class to which each Candidates belongs.

Course of Study for the Dental Licence.—Candidates are required to pass three examinations.

First Dental Examination is in all respects the same as held concurrently with the First Professional Examinations of the College under either of the Conjoint Boards, at the option of the Candidate, to Regulations for which Candidates are referred.

Second Dental Examination is in all respects the same as held concurrently with the Second Professional Examination of the College, under either of the Conjoint Boards, to Regulations for which Candidates are referred.

Candidates who, under Regulations of the College, would be exempted from first or second Professional Examinations under the Conjoint Boards, are similarly exempted from the first or second Dental Examinations.

Final Examination.—Candidates must produce evidence—

1.—Of having passed the second Dental or second Professional Examinations under the Conjoint Board with the Royal College of Physicians in Ireland, or with the Apothecaries' Hall, or an equivalent Examination recognized by the College.

2.—Of having attended, subsequent to registration by the General Medical Council, the following courses of Lectures recognized by the College.

Dental Surgery and Pathology,
Dental Mechanics, } of each, Two Courses.

Dental Anatomy,
Dental Metallurgy, } of each, One Course,

3.—Of having attended for two years the practice of a Dental Hospital recognized by the College, or of the Dental Department of a General Hospital so recognized.

4.—Of having attended one course of Lectures on
a. Physiology.
b. Surgery.

5.—Of having, subsequent to passing the second Dental or an equivalent Examination, attended for a period of nine months as Extern, or six months as Intern Pupil, the practice of a recognized Medico-Chirurgical Hospital.

6.—Of having been engaged for at least 45 months in acquiring a knowledge of Dentistry.

The Candidate is recommended to devote at least three years to acquiring a practical knowledge of Dentistry under the instruction of a Registered Dentist. Candidates holding a Diploma in Surgery are only required to produce certificates of one years' attendance at a Dental Hospital, and one course of each of the Special Dental Subjects except Dental Anatomy and Physiology, from which they are exempt. As this remission has been made on the understanding that the Surgeon devote his whole time to Dental work, such attendance must be taken out after the date of his Diploma in Surgery. Dental Students who have passed the first or second Dental Examinations may obtain credit for the first or second Professional Examinations of the Conjoint Board by whom their Examinations were conducted on payment of difference of fees. Licentiates in Dentistry are exempted from examination in Surgery at the third Professional Examination of the Conjoint Board by whom their previous examinations were conducted. Candidates educated in England or Scotland are admitted to Examination under the conditions existing in those countries.

Subjects for Examination.—Candidates are examined in :—

Special Subjects.
- Dental Surgery—Theoretical, Clinical and Operative.
- Dental Mechanics—Theoretical and Operative.
- Dental Anatomy.
- Metallurgy.

General Surgery—As for Third Professional Examination under either of the Conjoint Boards.

Candidates who hold a Diploma in Surgery, or have passed in Surgery, at a Third Professional Conjoint Examination, are exempt from the Surgical portion of the Examination. Candidates may present themselves for examination in the Special Subjects or in Surgery separately, but must in every case lodge the full schedule and fees.

Order of Examination.—First Day (Written), 11 to 1 and 2 to 5. Five questions each in Surgery, Dental Surgery, Dental Mechanics, Dental Anatomy, Metallurgy, are given.

Second Day (Oral), 4 p.m.—Each candidate is examined orally in each of the subjects of the first day, for a period of 15 minutes.

Third and Fourth Days.—(Operative Dental Surgery and Mechanical Dentistry). On these days the candidate's knowledge of Clinical Dental Surgery and Practical Operative Dentistry, and of Clinical Dental Mechanics, and Practical Mechanical work is tested. Candidates are examined at Hospital, and in the Dental Laboratory, and are required to perform operations on the model, and to carry out such mechanical work as the examiner shall direct.

Conference.—At the conclusion of the Final Examination, a conference of the Examiners is held, at which the Member of Council who has acted as Visitor presides. The Examiners' judgments are expressed in numbers, 10 being taken as the maximum mark obtainable for each act of Examination, and 5 as the pass mark. It is competent for Examiners at their discretion to permit high marks obtained in one part of the Examination to counterbalance small deficiencies in other portions. Rejected candidates on re-examination must present themselves in all subjects except Surgery, from re-examination in which the Examiners have power to exempt candidates whose answering has been satisfactory in that subject.

Fees.—Fee for First and Second Examinations is £7 7s. each ; re-examintion fee for rejected Candidates, £3 3s. The fee for the Final Examination is, in the cases of Licentiates in Surgery of the

College and Dental students, £12 12s; re-examination Fee, if rejected, £5 5s. For other candidates £26 5s.; for re-examination, if rejected, £10 10s. Extra Fee for Special Examination, £5 5s. Fees are not returned to Candidates who may fail to present themselves, or be rejected. All fees to be lodged to the credit of the Royal College of Surgeons at the Bank of Ireland.

EXAMINATIONS FOR THE LICENCE IN DENTISTRY SINE CURRICULO.—The Council has power to admit to examination, sine curriculo, Candidates who were in practice before July, 1878, whose names are on the Dental Register, and who are unable to furnish the certificates required by the foregoing regulations, on presentation of the schedule of application as hereinafter set forth, accompanied by any certificate they may have of general or professional education, and by the required fee.

The application of the candidate for examination shall be made on a form, obtainable at the College, setting forth a certificate, signed by two Fellows, Members, or Licentiates of a College of Surgeons, and by two Licentiates in Dental Surgery in the Royal College of Surgeons in Ireland [or two members of the British Dental Association, or of the Odontological Society] to the effect that applicant is of good moral character, was engaged in the practice of Dentistry before July, 1878, and has not, during the past two years, attracted business as a Dentist by advertising or other unbecoming practices. The application must also contain a declaration by the applicant subscribing to the terms of the declaration, hereinafter laid down for all candidates before receiving the diploma. The examination and fees for candidates sine curriculo are the same as for Final Dental Examinations of other candidates.

DECLARATION.—Candidates, before receiving the Diploma, are required to take the following declaration :—

I,..................of..................hereby declare that I am twenty-one years of age and upwards, that if I shall be granted the Diploma in Dental Surgery of the Royal College of Surgeons in Ireland, and so long as I hold the same, I will not seek to attract business by advertising or by any other practice considered by the College to be unbecoming; and I agree that such Diploma shall be cancelled on its being proven, to the satisfaction of the President and Council, that I have done so.

Any Licentiate violating this undertaking will be liable to have his Diploma cancelled, and to have his Licence from the College erased from the official Dental Register.

SPECIAL EXAMINATIONS.—Candidates seeking a Special or Supplemental Examination must make application to the Council of the Royal College of Surgeons (and show special cause), and, if admitted thereto, must pay five guineas in addition to the fees of the examination which they seek.

The subjects for examination, the fees, and the mode of carrying out a Special Examination, are the same as those above laid down.

AGE AND MORAL CHARACTER.—The Licence in Dentistry is not conferred on any Candidate under the age of 21 years, and unless he be of good moral character.

CERTIFICATION OF STUDY BY SCHEDULE.—The candidate shall present the evidences of his courses of study, in the form of a Schedule, on which the exact number of his attendances is certified. The Schedules for the different Dental Examinations are obtainable by candidates on application to the Registrar of the College. The candidate must see that the entries in his schedule are accurately made and are duly attested by the Lecturers of the School and by the Registrar of the Hospital which he has attended. He must present the schedule to the Registrar of the College, together with the bank receipt for lodgment of the necessary examination fees, and all other documents set forth in the schedule as necessary ; and he must, then and there, in presence of the Registrar, sign the declaration which appears thereon. If the candidate be prevented by absence from Dublin from presenting himself at the College, the Declaration must be witnessed by the Registrar of his School or Hospital, who will countersign the same. Each Schedule so lodged is retained by the College as evidence that the Candidate has fulfilled the course of study enjoined by these regulations.

The Dental Hospital of London.

THE 33rd Annual Meeting of this Institution was held at the Hospital, Leicester Square, on the 12th ult., under the presidency of Sir Edwin Saunders, Treasurer and Senior Trustee. In the report, which was unanimously adopted, the Managing Committee congratulated the Governors on the continued success of the Institution ; also on the great benefits which the Hospital continues to afford to the suffering poor, 48,764 cases having been treated during the year 1890, a large number of them painlessly (under anæsthetics) ; being 26,770 in excess of the number treated in 1874, when the Hospital was removed to its present site. That, unfortunately, there was £2,500 remaining of the mortgage debts on the Hospital, and they urgently appealed for funds to enable them to rid themselves of this encumbrance, incurred for the extension of the Hospital, rendered indispensably necessary to meet the growing wants of the Charity. The Managing Committee had pleasure in announcing the continued increase in Annual Subscriptions, it being an addition to the reliable income of the Hospital, and gratifying testimony of the interest taken by the public in the charity; nevertheless, it was most desirable that new Annual Subscribers should be introduced, and they confidently hoped to be able to announce in their next Report an Annual Subscription List of over £1,000. The Charity is unendowed, and additional funds would enable it to greatly extend its usefulness.

Royal College of Physicians of Edinburgh.

PARKIN BEQUEST.

We are requested to state that in the terms of the Bequest made to the Royal College of Physicians of Edinburgh by the late Dr. John Parkin, Fellow of the College, a prize is hereby offered for the best essay—"On the Curative Effects of Carbonic Acid Gas or other forms of Carbon in Cholera, the different forms of fever and other Diseases." The Prize is of the value of One Hundred Pounds Sterling, and is open to Competitors of all nations. Essays intended for competition, which must be written in the English language, to be received by the Secretary not later than 31st December, 1892. Each Essay must bear a motto, and be accompanied by a sealed envelope bearing the same motto outside and the Author's name inside. The successful Candidate must publish his Essay at his own expense, and present a printed copy of it to the College within the space of three months after the adjudication of the Prize.

In name and by authority of the Council of the College,

G. A. GIBSON, M.D.,
Secretary.

9th March, 1891.

MONTHLY STATEMENTS of operations performed at the Dental Hospital of London, Leicester Square, and the Victoria Dental Hospital of Manchester, for February.

		London.	Manchester.
Number of Patients attended		—	1,133
Extractions	Children under 14	421	717
	Adults	1,119	
	Under Nitrous Oxide	918	264
Gold Fillings		378	97
Plastic do.		1,410	179
Irregularities of the Teeth		84	—
Artificial Crowns		30	—
Miscellaneous		552	356
		4,912	1,613

THE DENTAL RECORD.

VOL. XI. MAY 1st, 1891. No. 5.

Original Communications.

THE HARD PALATE IN ITS RELATION TO BRAIN DEVELOPMENT,*

BY DR. T. S. CLOUSTON.

I DO not propose to dwell on any of the teratological defects that occur in the formative and embryonic stage of life, except in regard to a very interesting, and, in my opinion, very important morphological accompaniment of many of the developmental neuroses, viz., a change in the normal shape of the hard palate. The importance of this change consists not in any direct effects of the palate, bad or good, but in the indication as to brain constitution which it affords. The palate when typical, both in lateral and antero-posterior sections and in the arch formed by the line of the teeth, shows somewhat regular curves. The dome is not very high, and forms part of a circle whose radius is much larger than the width of the mouth.

Long ago it was noticed that in idiots the palate is very often not regularly arched, but "V" or saddle-shaped, and very high, while in this class the line of the teeth also is apt to be "V"-shaped instead of forming part of a circle in front round the incisors and canines. So much importance was attached to this abnormality, that it was put down by Dr. Langdon Down as characteristic of idiocy and congenital imbecility. Further observations upset this theory by showing that many idiots had normal palates, and that many sane persons had high "V"-shaped palates. Dr. Clay Shaw,† after a series of careful observations and accurate measurements in idiots, came to the conclusion that "there is no necessary connexion between a high palate and the degree of mental capacity of the individual." He pointed out that a high palate is invariably associated with a narrow pterygoid width and a narrow skull, and that it has "nothing to do" with premature synostosis of the skull base. But Shaw's measurements are manifestly incomplete and done on wrong principles, and his conclusions are only partially true, and clearly go beyond his facts. The next generalization about the palate I find in *The American System of Dentistry* (Leitch), in the article "Dental and Facial Types," by Robert S. Ivy, D.D.S., who looks on them as being part of the morphology of the temperaments. He says, "the shape of the alveolar arch and the dome of roof of the mouth, also the articulation of the teeth, and the manner in which the gum is festooned over each tooth, are all indicative of the several temperaments, and present varieties worth attention.

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* A Paper read before the Odonto-Chirurgical Society of Scotland.

† *Journal of Mental Science*, July, 1876.

"The arch of the bilious temperament from cuspid to cuspid is almost flat, the lines backward from these points slightly diverging in an almost straight line. The dome of the mouth is high and almost square. When articulated, the upper central incisors overlap the lower, and are closely locked. In general form the teeth are large, the corners tending to squareness, and are rather long in proportion to their breadth; in texture they are dense and strong. The proximal surfaces are in close contact two-thirds of the distance from the cutting edge to the neck, rendering the festoon of the gum short and heavy.

"The sanguine arch resembles a horse-shoe in shape. The dome of the mouth is high and semicircular. The articulation of the teeth is close and firm, and their structure is dense. The masticating surfaces of teeth in this class frequently bite edge to edge, and as age advances they are gradually worn down to the gum unless protected by artificial means. In general form they are well proportioned, length predominating in less degree over breadth, and their outlines are rounded and curved. The distal and mesial surfaces are in contact a little more than half the distance from the cutting edge, and the festoon is long and delicate in outline.

"The arch of the nervous temperament presents a strong contrast to either of the two preceding, and is sometimes spoken of as Gothic, from its pointed character. From the central incisors, which often overlap for want of space, the line of the remaining teeth continues backward with a slight curve, the greatest prominence being between the cuspid and first bi-cuspid. The roof of the mouth partakes of the same curve and angle as the arch. The articulation of the teeth is not close but long, and the teeth belonging to this temperament are of average density and structure. In shape, length predominates over breadth, the distal corner of the centrals is rounded, giving the whole tooth almost the appearance of a lateral, and the cusps and cutting edges are long and fine. The point of contact of the proximal surfaces is near the cutting edge, giving a long, delicate festoon to the gum.

"The lymphatic arch is almost semicircular in its outline, and somewhat resembles that of the sanguine temperament. The dome or roof of the mouth is flat and low. The articulation is irregular and the front teeth are apt to protrude. In shape, breadth predominates over length, and the normal depressions and elevations are either entirely absent or undefined. The festoon of the gum is thick and indefinite in outline. The lateral on either or both sides is frequently out of line." He gives figures to illustrate his ideas.

Now, I do not believe this generalization is altogether reliable, but, like the others, it contains some truth. I think I can supplement this literature of the hard palate by some further facts that I and our medical staff at Morningside—Drs. Robertson, Elkins, and Wilson—have brought out in an investigation into this subject that we have made during the past year, and I have also to acknowledge my great obligations to Dr. Smith, Mr. Bowman Macleod, and Mr. Ezard, of our dental profession in Edinburgh. After a very careful preliminary examination of many hundreds of palates of the sane, insane and idiots, I concluded that both Clay Shaw and Oakley Coles's * modes of trying to measure the palate accurately were incomplete, and therefore misleading methods. To express the differences and agreements in size and shape of a series of irregular ovoid cavities, like the hollows of the palate in different cases, by lines across or round special parts of them, seemed to me impossible; for in one case the greatest height is just behind the incisor teeth, in others where the hard and small palates meet; in some the lines of the alveoli that form the two sides of the cavity are almost parallel, in others they are divergent; in some the arch begins at once from the teeth on one side and passes over in a regular semicircle to those of the other side; while in others there is a sort of shoulder next the teeth on each

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* *Deformities of the Mouth.* By Oakley Coles.

side, with a narrow, high, saddle-like, acute arch between; while in others again the palate rises in two straight lines at an obtuse angle from the teeth, meeting high in the middle, and forming a "V"-shaped cavity. In case of some palates, a horizontal section through the two posterior bicuspids, in others behind the incisors, in others through the posterior molars, would give the best impression of their shape, while in others a longitudinal section in the middle would have done so. Some palates were so unsymmetrical that no sections could have exhibited their peculiarities. After very careful consideration I considered that the simplest and the best way was to adopt a classification that most of them seemed to me to fall into naturally. That was, to divide them into three groups. The first I would call the "Typical" or "Normal." It corresponds to Ivy's section of the "horse-shoe arch," and low but regular and wide dome of what he says is characteristic of the "sanguine temperament." The second I would call the "Neurotic," for reasons to be given. It has a more Gothic arch, with the alveoli tending to run more parallel for a greater distance than the "Typical," and with a much higher and narrower dome, the roof of which is formed by a larger part of a smaller circle. The third class I would call the "Deformed" palate. It is of various shapes, all abnormal, but the most common form is very high, very narrow, and at the top either "V"-shaped or saddle-shaped, on account of the shoulder on each side of the teeth I have described. In this class I would include, in addition to the more common or saddle-shape, all the marked asymmetries, marked central bulgings along the line of ossification, great depressions where the intermaxillary bones join, and the cup-shaped hollows which we find in some cases in the centre. By far the majority of the third, "Deformed," class were "V" or acutely saddle-shaped, however. In some of both the "Neurotic" and "Deformed" the jaws projected forwards so as to cause prognathism, but this seemed to me to have no necessary connexion with the shape of the palate.

I need hardly say that, like all things in Nature, the three classes ran imperceptibly into each other with no abrupt line of demarcation, so that there were a number of cases where one simply had to use one's best judgment in determining the class they were to be put into, and two persons might, in regard to those cases, have classified them differently. These were too few, however, to affect the general result, most of the palates we examined falling readily into one or other class.

The first thing in this investigation was to ascertain how the palates of the general population stood in this classification. For this purpose we examined all the officials and servants of the Asylum, all the boys in an advanced school for the more educated classes, and Mr. Bowman Macleod kindly allowed me to use the casts of the palates in 363 patients of his which he had by him, and which had been taken for the ordinary purposes of dentistry. This made up 604 persons of different classes and ages. Of these we found 40·5 per cent. to be "Typical," 40·5 per cent. "Neurotic," and 19 per cent. "Deformed."

We next, by the kindness of Dr. Leslie and Mr. Skene, examined all the inmates of the National Institution for Imbeciles at Larbert, containing patients exhibiting every degree of idiocy and congenital imbecility. No doubt the very worst and most untrainable class of idiots are not fully represented there, so that the results I am about to state might be still more striking. To the Larbert patients we added our congenital cases in the Royal Asylum, making altogether 169 cases of congenital mental defect; of these 11 per cent. were found to have "Typical" palates, 28 per cent. were "Neurotic," and no less than 61 per cent. "Deformed,"—the average degree of abnormality in the deformed being far greater than the abnormality among the general population, that is, we found the worst palates of all among them.

No one considering the enormous difference between the congenitally weak-minded and the sane, and taking into account the close and necessary relationship of the upper maxillary bone to the base of the skull, and the necessary dependence of the skull-base and palate on the brain, can have any reasonable doubt that we thus have in the shape of the hard palate some index of the brain development, and a fact of very great importance to the anthropologist and the physician. There are over three times more deformed palates among idiots and congenital imbeciles than among the sane, and only one-tenth of the idiot palates were typical, while over two thirds of them were deformed. Less than one-fifth of the palates of the average population are deformed.

These results naturally suggested an examination of the palates among the insane suffering from acquired insanity. We found that out of 592 patients examined in the Royal Edinburgh Asylum, only 23 per cent. had 'Typical" palates; in 44 per cent. they were "Neurotic," and in 33 per cent. "Deformed." The "Deformed" cases seemed to comprehend by far the majority of the patients where a strong neurotic or mental heredity was known to exist. I had for several years noticed that the palates of those labouring under "adolescent insanity" appeared to be high, and as I had long ago demonstrated that this was the most hereditary of all the forms of mental disease I took every case that was labouring under either acute adolescent insanity, or under the secondary dementia in which many of such cases end if they do not recover, and tabulated them separately from the rest of my patients. We had 171 such cases, and of these I found 12 per cent. only with "Typical" palates, 33 per cent. with "Neurotic" palates, and no less than 55 per cent. with "Deformed" palates. In the number of "abnormal" palates, therefore, the adolescent insane approached closely the congenitally weak-minded (55 against 61 per cent.), though the average degree of abnormality was much greater among the idiots and imbeciles.

By the kind permission of the Commissioners of H.M. Prisons for Scotland, I was allowed to examine all the prisoners in the Edinburgh Prison on the 29th October and 3rd November, 1890. These are chiefly short-sentence prisoners, whose offences have been mostly of the minor kind—theft, assault, disorderly conduct, &c. They are many of them habitual and reputed criminals of the less dangerous kind, and a large proportion of them are of the "degenerate" class bodily and mentally. Fully two-thirds were, in face and stature and appearance, far below any average standard of human development. They seemed to me to be a fair example of the lesser criminal and "degenerate" class of our large cities. They were 286 in number, and 22 per cent. of them had "Typical," 43 per cent. "Neurotic," and 35 per cent. "Deformed" palates. In so far, therefore, as the palate is any index of brain and mental development—which need not necessarily be synonymous with brain and mental action in detail—the criminals and the lunatics stand alike. In so far as it goes, this confirms some of the conclusions of the continental criminal anthropologists, such as Despine, Lombroso, and Benedikt, but it does not confirm Lombroso's idea that the habitual criminal is a "reversion" to the savage type of man, for, as we shall afterwards see, savages commonly have good palates. There happened to be six babies under a year old in the prison with their mothers, all women of a degenerate class, and, of these, four had “deformed” palates. Thus early this small bodily defect seemed to foreshadow an undue liability to crime, degeneracy, insanity, or idiocy, for these four innocent occupants of the prison cells, which in their case were no unfit type of the hard fate and the unyielding tyranny of their heredity, from which it seems as if it will be as impossible for them to escape as it was for their mothers to burst their prison bars.

We examined specially the 34 epileptics in the Asylum, and found that 20 per cent. of them had “Typical” palates, 43 per cent. the “Neurotic,” and 37 the “Deformed,” thus differing little from the rest of the insane.

By the kind permission of Dr. Carmichael and the Governor of the City Poorhouse, we examined its inmates, but so many of them were very aged persons who had lost all their teeth that it was very difficult to classify their palates. The absorption of the alveoli in very old age quite alters the shape of the palate. The accompanying table shows the above facts.

Frequency of the Occurrence of the Three Types of Palates in Various Classes of Persons Examined.

The Different Classes of Persons.	No. 1. “Typical” Palate.	No. 2. “Neurotic” Palate.	No. 3. “Deformed” Palate.	Number of Persons Examined.
	Per cent.	*Per cent.*	*Per cent.*	
The general population... ...	40·5	40·5	19	604
Criminals (the degenerate) ...	22	43	35	286
The insane (acquired insanity)	23	44	33	761
Epileptics	20	43	37	44
Adolescent insanity	12	33	55	171
Idiots and imbeciles (congenital insanity)	11	28	61	169

In considering the palate and upper maxillary bone, one must take into account the following considerations, viz. :—

1. Its relation to the base of the skull in man. This relation is seen to be close and absolute as compared with the lower animals. If a perpendicular line be drawn *marking* the most anterior point of the brain, it is seen to fall in man through the centre of the hard palate, while in the monkey it only just touches its posterior margin. In man it thus has a direct relationship to the brain base, and its

shape would be dominated by the width of this, while in the monkey it is merely a part of the alimentary system, having little relationship to the base of the brain at all. No one can compare the two without seeing that its conformation in man will naturally follow any changes that take place during development in the skull-base.

2. If the skull in its growth, its size and shape, its dome and base, is absolutely dominated by the brain which it defends and contains, then the brain growth will in this way secondarily determine the shape of the upper maxillary bone and the palate,

3. The brain unquestionably deriving its shape and size and qualities from ancestry, and a bad heredity determining a bad brain, we see how a bad nervous heredity would naturally determine an abnormal palate.

4. The theory that a high palate may be a "reversion" to a lower animal form, or to the form in lower races of mankind, seemed to be largely disproved by a careful examination of the palates of most classes of animals, and of different races, from the European to the extinct Americans and the Australians and Hottentots, which I made in the Anatomical Museum of Edinburgh University. Where dolicocephaly and brachiocephaly is a matter of race and not of disease or degeneration, they make no difference in the palate dome. There is no such thing as a high "V"-shaped palate in any animal nor in any race from the Australian aborigines upwards. In one way only can the "V"-shaped palate be connected with a reversion to the animal type. Apart from prognathism, the sides of the palate, that is, the lines of the bicuspid and molar teeth on each side tend to run parallel to each other. Now, supposing the lines of the teeth in man during development were approximated and made parallel by a formative reversionary process, the palate would be pushed up in the centre, the line of least resistance, into the nasal cavity. Those palates where the deformity consisted in a ridge down the centre antero-posteriorly, seemed to show that in them the deformity took place at a later period than in the other deformed palates, when the nasal septum was getting stronger, and kept the centre of the palate down while on each side of it the palate was drawn up, making two vaults side by side instead of one.

5. The theory that the shape of the palate is dependent on the nasal cavity, of which it is the floor, seems to me to be without any valid foundation whatever. The upper maxillary bone is related to

three functions, viz., alimentation, smell and facial expression. There is no proof that either smell or mastication is interfered with by a high dome or by a pointed alveolar arch, but unquestionably facial expression is greatly influenced by any change in their form; and facial expression is naturally related directly to the development of the mental part of the brain, and is dependent on it. Speech, I found, is affected slightly by the shape of the palate.

6. The theory that "Deformed" palates are due to "thumb-sucking" in infancy is utterly baseless. Idiots notoriously don't suck well.

Prognathous jaws certainly seem to be a "reversion" to an animal and lower human type, but they do not necessarily imply a high palate.

8. Virchow's theory of premature or irregular ossification of the skull sutures, though it may explain some few cases of idiocy, does not seem to me to explain the high palate any more than I think it explains the dolicocephalic or brachiocephalic types of head, or the types of cerebral sulci.

9. The deformity of the palate occurs during brain growth, early in life, probably *in utero*.

10. We must refer the high palate to a bad initial neurotic heredity, just as we refer a bad type of face or irregular teeth, or an asymmetrical head, to such heredity. Mere accidental changes in the head shape are perfectly consistent with perfect brain development. The brain in its growth, if artificially confined in one direction, will expand in another, and not suffer in function thereby. The savages who make their children's heads square by pressure don't alter the mental or motor functions of the brain thereby.

11. The vaulted palate and altered dental arch must be taken with other changes in the head, and especially in the face expression, as one of the morphological indications that show a tendency in the person to whom it belongs and in his family towards developmental neurotic diseases, notably idiocy, congenital imbecility, stuntedness of growth, deformity, epilepsy, adolescent insanity, and that organic lawlessness and lack of mental inhibition or weakness of mind that distinguish the criminal classes. It thereby is one of the marks of a family that is tending towards mental death and extinction.

12. As regards the exact mode in which the palate deformity arises, I cannot find any help in a study of the mode of ossification of the

upper maxillary bone through its four centres, except in the cases where deformity consists in a depression, or two depressions where the four centres of ossification meet.

13. If the anterior lobes of the brain, and that is the part of the brain that lies above the palate, become contracted through hereditary brain deficiency, and the skull base in front is therefore narrowed, while the jaw must remain large enough to hold the normal number of teeth, it might naturally assume more the shape of the bow of a boat than a horse-shoe, the alveoli of the bicuspids and molars on each side being drawn together by the narrow skull base from which they hang, and this process would throw up and deform the palate. Clay Shaw's measurements of the skull base and the pterygoid arch give much support to this hypothesis. In congenital mental defect, it is the anterior lobes that are chiefly found deficient, and in the microcephalic and Kalmuck classes of idiots, where the brain has undergone most developmental lessening, the palate is found to be highest and most deformed.

14. Taking all the facts into account, it seems proved that the condition of the palate may be a most important index of brain development, and of liability to the developmental neuroses. My second class of "Neurotic" palates is apt to go with a nervous temperament, often with a neurotic diathesis ; often with high mental qualities, but not all roundness of capacity ; often with keen sensitiveness or supersensitiveness of bodily feeling and emotion, and frequently with liability to the lesser functional neuroses, such as hysteria, neuralgia, migraine, headaches, etc. It seemed to me, too, that the consumptive are more apt to have neurotic, and many of them deformed, palates than the sound in body.

15. I did not find any connection, hereditarily or otherwise, between my "deformed" palate and cleft palate. They seem in a way to represent formative tendencies *in utero* in opposite directions. In the case of the ossifying centres in cleft palates, they had not been able to meet in the centre and close in the floor of the nares through, perhaps, excessive width of skull base, while in the latter, as we have seen, there was a greater width of palate bone than was needed to stretch across, and so it had to rise up in the centre and form an acute angle or a high arch.

METHODS OF RETAINING ARTIFICIAL DENTURES IN THE MOUTH.*

By C. S. Reid.

Mr. President, Gentlemen,

It is certainly not a desire to pass as one who has had a large experience in the fitting of artificial teeth which prompts me to make this attempt at bringing before you those methods of practice in this department of dentistry which have come to my notice, but rather a desire to take my share of the duties which I feel rest upon all members of a Society like this. Therefore, I shall endeavour to give you a description of what means I am acquainted with for the retention of artificial teeth in the mouth, hoping that those who have a larger experience and more extensive resources than myself will not hesitate to give us the benefit of their knowledge, and thus make the evening mutually profitable and interesting.

In making artificial substitutes for teeth which have been lost through any of the various causes which bring about this unfortunate state of things, the feature which troubles the dental practitioner probably more than anything else is how to fix them in the mouth in a suitable manner, so that they shall not be too readily displaced during the movements of mastication and speech, whilst being at the same time comfortable and easy to the wearer.

Of course, when there are natural teeth still retained in the jaw this is a comparatively easy matter, but at times edentulous cases are apt to bring much anxiety to the concientious dentist's mind.

There are three classes of cases to which we have to adapt our methods of fixing artificial teeth, namely: Those in which the crowns only of the natural teeth have been removed from the mouth, the remaining roots and teeth being in, or capable of being brought into, a healthy condition. Those in which the entire tooth is missing in one or more places in the jaw, or in which what remains of the teeth are left are of no available service, as far as a means of retention of artificial teeth to supply their place is concerned. Those in which all teeth and roots are removed from the mouth in either one or both jaws. We will consider the classes in order, as enumerated.

First :—When the roots of the missing teeth are in position and in a state of health, and only two or three crowns are missing. Probably for these cases the method known as "pivoting" is the most satisfactory. Patients have almost always a dislike to wearing a plate of any description, and if they can possibly avoid doing so they are most anxious to adopt any plan that will dispense with the necessity of it. There are many ways of securing artificial teeth to roots by means of pins inserted in the artificial teeth, on the one hand, and into the pulp canal of the root on the other. In all of them the root is first prepared as if for root filling, and the canal enlarged to receive the pin. Either ordinary tube teeth, or flat teeth in conjunction with metal in the form of backings or collars, or crowns specially made for the purpose may be used. The pins are soldered to the flat teeth, or fastened to the tube-teeth with cement, and fixed into the roots by means of either phosphate of zinc or amalgam. Important points in these cases are—first, be careful that no overhanging edge of tooth, metal, or cement be left, as it may prove a source of irritation, and possibly lead to the ultimate loss of the root; second, that the exposed dentine is entirely protected, or caries may arise, and thus destroy the root and ruin the work. The defects of this system are the liability of the pin to break off when subjected to much strain, and the difficulty of repairing when once a broken pin is left in the root.

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* A Paper read before the Students' Society, London Dental Hospital.

There are many variations of this principle as applied to the fixing of single teeth, which, however, I think make a subject to itself, and so I will not attempt to describe them now.

I will, however, bring before your notice the application of the pin as a fastening medium, in cases in which some teeth are entirely missing, whilst the crowns only of others are destroyed.

Pins may be fitted in each root left and to these pins a bar fixed by soldering. To this bar the artificial teeth are then attached, and thus three or more teeth can be retained by pins inserted in two roots. The teeth over the roots are fitted as for single teeth, the remaining tooth or teeth being fitted to the gum as in ordinary plate work. There are one or two difficulties to encounter in this method. If the pins are not quite or almost parallel there is some trouble experienced in getting the arrangement into position. Then as the pressure on those teeth is somewhat severe the pins are apt to work loose. I have seen several cases myself in which it was almost impossible to remove the denture by using ordinary force, and yet the teeth dropped one-sixteenth to one-eighth of an inch whenever the wearer opened the mouth.

Again, the tooth attached to the bridge only is more liable to break, even than an ordinary pivot tooth, as it has no efficient support beneath it, and when a tooth does break there is great difficulty in replacing it without disturbing the whole arrangement. Also, however close fitting the tooth or teeth supported by the bridge may be to the gum, yet food will collect in the interspace, and is very disagreeable to some patients, as it is impossible to remove the denture and cleanse it.

There are many ways which have been suggested in order to overcome the difficulties presented, but whether they do so entirely or not I am unable to state. I fear I have not time to dwell upon them however, and so pass on to class 2.

In cases in which no roots remain it has been suggested, and even practised, that a bar, similar to the one previously mentioned, should be fitted into cavities existing or cut in the adjacent teeth, and then by building up a gold filling so as to enclose each end of the bar, thus secure it in the required position. It is doubtful whether the teeth so used as retainers are capable of supporting the extra strain of the added teeth without impairing their own well-being. In my estimation, in cases of this class a small plate of either metal or vulcanite is most suitable.

Some practitioners make it a rule not to use anything but metal, but I cannot myself see anything objectionable in the use of vulcanite. One thing to be guarded against is, making the plate too small in dimensions, as there are many instance on record in which the plate has been accidentally swallowed, and has given rise to serious trouble in some part of the alimentary canal. The plate may be held in position by means of clasps, or bands of metal, which encircle the natural teeth. These clasps should, if possible, be arranged in pairs, preferably one at each side of the mouth. The point of greatest importance in fixing them, is to see that each clasp has some opposing point upon which its elasticity may be brought to bear. This may consist of a clasp on the opposite side of the mouth, or one on the same side which acts in a contrary direction, or even, as in teeth standing alone, the opposite end of the same clasp. The teeth most suitable for clasping are the bicuspids, as they occupy a central position in the mouth, and are of a shape very suitable for a band to clasp effectually. The band may consist of a strip of metal bent accurately round the tooth, and filed below so as to coincide with the free edge of the gum. At the edge next the masticating surface of the tooth, it should reach just to the point at which the wall begins to bevel off to form the cusps. On the labial surface, the band is cut off obliquely. If the tooth stands alone, the posterior lip of the band is left longest, the anterior being cut short, so that if possible, it does not shew, and yet at the same time remains efficient. If another tooth approximates to the one to be clasped, the anterior lip is fitted into the retiring angle between the two teeth, the posterior being prolonged pretty well forwards on the labial surface of the tooth, and then hollowed out so that it does not shew too much. This hollowing out gives another advantage, it enables the clasp to pass over the somewhat prominent convexity generally present on the labial surface of the tooth, and thus obtain a more effectual grasp.

In some bicuspids, the nick of the tooth is very much constricted. In these, the band must not fit too closely to the constricted part, or it will be impossible to get it into position, when it is attached to the plate. For very shallow crowned teeth it is well to use wire instead of plate. Bands for molar teeth are made in a similar way, but the prolongation on the labial surface need not be hollowed out so much. It is sometimes necessary or useful to clasp canine or incisor teeth. Owing to the peculiar shape of these teeth, our clasps must be made of a form differing from those before mentioned.

There being little, if any perpendicular wall on the lingual surface of the tooth, our band must be well cut away here, but at the sides it must be brought well up, for unless this is done, owing to the contracted neck of the tooth, we shall not be able to gain any advantage from the clasp. The anterior part of the clasp may be finished off by cutting it obliquely or by shaping it like a horn. In cases in which all the back teeth are missing, the front six only remaining, although suction is the force mainly relied upon for holding the plate in position, yet it is advantageous to fix clasps round each canine. This helps to hold the plate up, if an upper, and also counteracts the tendency of the plate to slide backwards when in use. For this purpose, the shape for canines first referred to is used, but instead of cutting off in front as indicated, it is prolonged round the tooth, and thus gets a grip from the front. Instead of prolonging the clasp itself, some practitioners use a combination of the ordinary canine clasp, and a medium sized wire to hook round the labial surface of the tooth. In cases in which two or three teeth only are left at one side, a band should be placed round the most anterior, and most posterior teeth. These, when tightened, counteract each other's force, and thus become more effective than a single band would be.

It occasionally happens that we have a jaw in which only the two back molars are standing, and these are extremely shallow. It is impossible to fit a plate band to them, and the ordinary wire clasp seems to be of little use. I have used for this class of tooth a fairly stiff wire, closely adapted to the neck of the tooth, and with the two ends embedded in the vulcanite. In order to tighten it, it is bent slightly out of shape, by closing the jaws of a pair of square ended pliers upon it. This kind of clasp is often very effective, where others have completely failed. For some kinds of teeth situated far back in the mouth, vulcanite may be substituted for metal, and is often very useful. The teeth most suitable for these bands are those very long molars and bicuspids, from the roots of which the gum seems in a measure to have receded.

The clasp is moulded around the tooth in wax, and reproduced in vulcanite along with the other parts of the piece. When it is polished and finished, and an attempt is made to insert it in the mouth, it is probable that it will be found impossible to force the band over the tooth. If this happens, see that there is not too much undercut on the lingual surface of the tooth. If there is, a little should be cut away from the vulcanite corresponding to it. Then with a fret saw cut through the vulcanite band at the point corresponding with the posterior external angle of the tooth, and if the band has not been left too thick and clumsy, it will be found to spring sufficiently to pass on to the tooth, and will prove a very efficient means of support to the plate. If it should at any time get a little loose it can easily be tightened by gently warming and pressing the vulcanite inwards.

The last division includes all cases in which all teeth have been removed from the mouth, or what remain are cut off level with the gums, and are of no use as fastenings by the use of pins or clasps. There is no doubt that for these cases a plate so constructed as to take the greatest advantage of the two natural forces, atmospheric pressure and adhesion, is the most successful.

Mr. Balkwill points out in a work of his on the subject, that when the jaws are of certain stated general shapes and conditions success is almost universally certain, whilst if not possessing these conditions they are almost as certain to be unsuccessful. He furthermore quotes certain cases to prove his theory. I will not, however, trouble you with a recital of his statements. Whether his theory is correct or not, my limited experience does not enable me to decide, but certain it is that in many cases, although as far as we can see the conditions appear identical with those of others that have been successfully treated by us, yet our best efforts are of no avail in attempting to make an ordinary suction plate retain its position in the mouth. In the event of this occuring we have to resort to various expedients, by which, if possible, to overcome the difficulty. In constructing a plate on which teeth are to be held in the mouth through the agency of suction or adhesion, the condition perhaps contributing most to its success is, that it fits the jaw perfectly. It must also cover as much of the palate in the upper jaw as is compatible with the comfort of the patient. I have found in more cases than one, that the addition of one quarter of an inch or so to the vulcanite at the posterior border of the palate portion of the plate, has converted what seemed likely to be a failure, into a comparative success. I believe that this little extra substance in the mouth, makes no permanent difference to most patients, as far as comfort is concerned, and therefore is not objectionable. Then the articulation of the teeth must be perfect, so that when the lowers press upon the uppers, the pressure shall be evenly distributed, and thus prevent any tilting or displacement of the plate.

This prevention of tilting may also be greatly assisted by so arranging the teeth, that the direction of any force applied to their masticating surfaces, shall fall within the arch of the alveolar ridge. Of course, in the case of the six front teeth, this is seldom possible, but with the back teeth, such an arrangement is, in the majority of cases, possible and advisable. There are exceptions to the rule that a perfect adaptation of the plate to all parts of the palate is best. They are where hard, unyielding ridges exist about the midline of the palate. It is then necessary to ease the palate well over the hard parts. For this purpose many people use what goes by the name of a suction cavity, that is a shallow cavity in the plate, just at the point where it comes in contact with the ridge. It has been thought by some that these cavities increase the force of the atmospheric pressure by forming a vacuum, but this is a doubted matter. Sometimes a flexible rubber disc is combined with the cavity. The disc is cut out to correspond in shape with the cavity, and fixed to it by a pin passing through its centre and into the plate. Its action is like that of the sucker of our boyhood's days, and although those who have used it, speak highly of its value, I do not think its use commendable. There are many other varities of discs and valves, all somewhat similar in action, the advantages of which are, however, from what I can gather from those who have used them, doubtful.

Instead of using either discs or valves, recourse is often made to the use of ridges on the palate surface of the plate. In some instances these ridges are formed by cutting a slight groove in the model, on which the piece is vulcanized. This forms a ridge, which should follow the outline of the posterior border of the plate at about a distance of a quarter of an inch, turning at about that distance from the alveolar ridge, and following its outline in a similar manner, thus making a continuous ridge enclosing a somewhat triangular space. Although I have not had much experience of this form I have heard it highly spoken of. Advantage may also be taken of the fact, that on each side of the mid-line of the palate, the soft parts covering the bone are somewhat thickened, filling up a couple of grooves, as it were, in the palate portion of the bone. The situation of these thickened portions is determined as accurately as possible, and to correspond with them, two prominent ridges are made on the plate. These, when the plate is inserted into the mouth, quickly embed themselves in the tissues, causing little or no pain, and are often of great service in retaining a plate which has a tendency to drop or move about. The degree of prominence of the ridges varies in different mouths, some I have seen being quite one-eighth of an inch in height. Their length must of course be limited by the extent of the thickened part of the mucous membrane. If this is not carefully noted, and the ridges adapted accordingly, they may, by coming in contact with the unyielding bone, prove a source of trouble instead of assistance. It is stated that if the surface of a plate is rough, it retains its position in the mouth with more certainty. To this end various means have been recommended for producing a suitable surface. The use of a kind of gauze, which is pressed on to the model previous to vulcanizing and the piece vulcanized with the gauze still in position, so that after vulcanizing, when the gauze is removed from the vulcanite, a roughened surface corresponding to the gauze is produced, may be mentioned as one. Another is the use of small round headed nails. These pressed into the model form a number of convex eminences, which produce a corresponding number of concave depressions on the piece modelled to it. These methods may be used in the case of either upper or lower dentures, and are said to have wonderful effects in either case.

Springs are appliances of very old date, and although there appears to be a tendency to look disapprovingly on them at the present time, there is no doubt that they are on certain occasions most useful, if not indispensable. The way in which they are applied is familiar to all. One point to be careful about in applying them is to see that they lie closely and neatly to the labial surfaces of the artificial gums and teeth, thus avoiding any irritation of the cheek. And another, to so arrange the swivels and pins to which the springs are attached, that elasticity of the springs acts in a vertical direction. This may be assured by placing the pins vertically over each other when the teeth are closed, in the manner corresponding exactly with the natural bite. Should this be neglected we may find that instead of helping to keep the teeth in position in the mouth, they give them a tendency to jump out, in a most distressing manner.

Lastly, I would direct your attention to a method which has been recently spoken of by a contributor to one of our dental journals. It consists of the insertion of pins, projecting from the approximal surface of the plate into the substance of the jaws. They may be either allowed to project into the cavity left by an extracted tooth or root, and thus become surrounded by the bone which makes up the hole under ordinary circumstances, or special holes may be drilled for their reception in the bone itself.

I understand that both plans have been tried by the gentlemen who introduces the method to our notice, and that nothing of a serious nature has arisen therefrom to indicate that the principle is bad. Whether such indications will appear or not eventually, practical experience alone will shew.

And now, gentlemen, though fearing that my paper lacks that explicitness which is desirable, I trust that you will be free with your criticisms and discussion, and thus supply that in which I am lacking, and enable me to see how, in the future, I may improve myself.

ADDRESS BY THE PRESIDENT OF THE IRISH BRANCH, BRITISH DENTAL ASSOCIATION.

W. Booth Pearsall, F.R.C.S.I.

It is my duty to thank you all most gratefully for the very great honour you have conferred in electing me your President for the year, an honour I value all the more highly, as it is owing to the diffidence and modesty of two of my seniors, that my opportunity for acting as President has come so quickly in the history of the Irish Branch of the British Dental Association. To be the successor in this office of the distinguished men who have preceded me is no mean honour, and I shall endeavour to follow in their footsteps, and forward to the best of my ability the interests of the special branch of surgery we practise. On an occasion like this when there are so many matters of interest to be laid before you for discussion, I hope I shall not trespass upon your good nature, if I briefly refer to some subjects that appear to me of more than passing interest to us, and worthy the attention of skilful and educated men.

Our knowledge of many dental subjects is very far from being exact, and it would seem desirable, that some suitable method should be adopted to investigate and confirm the facts relating to many subjects, that we can obtain information about all over the kingdom from competent and careful observers, most of which facts indeed can be seen by the use of the naked eye. Of the making of microscopical sections at this time there is no end, and the microscope seems for a long time to come, likely to occupy the position of a fetish, to the neglect of quite a world of valuable facts that are more useful to us in our every-day work. I will not occupy your time by going into detail on this vast subject, but those who assisted me in the formation of the splendid collection of abnormal teeth we showed in Dublin in 1888, will admit we all learned a great deal, respecting the nature of both crowns and roots, we did not know before, and facts too that are unmentioned in the best text books. In the vast subject of irregularity in the growth and position of the teeth, it seems to me that our knowledge will bear considerable enlargement of horizon, if I may judge of the conflicting advice given to patients with respect to these terrible disfigurements of feature, most of which are quite amenable to treatment when they fall into patient and skilful hands. I think, therefore, it would be a most useful work, if we as a Branch took up each year some special subject, and by the aid of our members, and a well constituted sub-committee worked out the details so far as our material would permit us. So far as I know, for instance, there is no collection accessible of what may be termed the typical irregularities of jaws and teeth prevailing in the British Isles, for comparison, or for reference, and we at least could do something towards this by taking an impression of every irregularity that comes under our notice, and deliberately forming a collection of casts whether the cases are treated or not. The result of this policy would be that a large number of members would become, I hope, interested in the elucidation of a special subject each year, and by the aid of the camera, photographs of distinct types could be placed at the disposal of all our members, instead of each of us being burthened with a bulky collection of plaster casts, more suitable for a museum than a private house. In the same way the annual meeting of the Association should be made an occasion for the publication of the results of similar investigations all over the Kingdom, together with the conclusions to be drawn from the facts recorded. I have little doubt, if all the members engaged in teaching students did this in the eight or nine tolerably equipped dental schools we possess in the United Kingdom, we would do more to place our profession on a proper foundation of knowledge, than anything we have collectively done since the passing of the Dentist's Act in 1878. I am told that in none of the dental schools in America is there what can be called a high class museum of the observed facts that can be gathered together from casts and specimens, nor does there appear to be the earnestness in collecting these facts, we might suppose from the numbers of crude, theoretical and impracticable papers our professional brethren inflict on one another at dental meetings in America. That some serious effort is needed to draw together the earnest men practising dentistry in the United Kingdom with a view of recording practical dental matters, I have only to point to the number of meetings of the Odontological Society of Great Britain that are now occupied by surgeons and physicians who are not dentists, with matters that cannot be considered as relating to our speciality except in a remote and fragmentary way. As I do not think it is our duty, or our policy, to become oral surgeons or physicians in view of the highly mechanical basis on which most of our services to mankind rest, this is a strange policy for the "blue ribbon" society of dentists to pursue, when we know of capable men practising our vocation who have accurately observed original facts, and who have invented original instruments or tools, yet who are never invited by the Council to place their facts or their inventions before the Society at any of its meetings. We read in the Presidential Addresses year after year of the great interest the Society has shown in the progress of scientific dentistry and the care it has given to its development. Unable to spend its annual income, the Odontological Society of Great Britain is debarred from a deficiency of practical imagination, to place the magnificent material it has collected for years in its museum, in a condition to be serviceable for the wants of students or the intelligent dental practitioner. The condition of "*disjecta membra*" of most of the dental museums I have seen is disheartening, for despite the treasures of rarity and price we see therein, the want of order and facility of reference leaves them of little use to the owners or the profession.

In the address lately given by the President of the Odontological Society of Great Britain, he expressed a very warm appreciation of the collection we brought together in Dublin in 1888, and also a fervent hope that we should hand over that collection, in bulk, to the dusty and disorganised cases of the London Museum, where they are already so much embarrassed with the wealth of their ill-arranged material, that they do not know what to do with it for want of some orderly, and may I say scientific system of putting the material together. I hope the aspiration of the President in this direction will not be listened to, but on the contrary, I hope that each Branch of the British Dental Association will now form a museum of its own wherever a suitable focus or room can be found for it, and if sensible and modern methods of display and classification were adopted in the storage or exhibition of specimens, such museums ought to prove of the highest value to busy practitioners. Were the

Odontological Society of Great Britain to offer a handsome cheque to the dentist who can suggest the most original and adequate plan for the arrangement, classification, and display of the unrivalled collection they already possess, and carry the plan into practical effect, and, in addition, publish an illustrated catalogue so as to meet the needs of the student, and the practitioner, more practical good would be done to our profession in a sadly neglected direction than the institution of gold medals. blue-ribbon memberships, or travelling scholarships, for even the most enthusiastic students. In our needless anxiety for the future, we are, I fear, too often inclined to overlook the needs of our fellow practitioners of to-day, who may, or who may not, have had adequate opportunities to perfect themselves in their art, and as we are always lectured in this direction of sharing our professional knowledge with our fellow men by the London *savants*, perhaps my remarks may induce them in return to give some attention to a matter that, were it placed in its proper position, would to my mind be a great national glory. With the museum in London in dust and confusion, how can we convince the wonderful American dentist that knows everything, that the British dentist in scientific knowledge or skill is better than a hired man? Were this collection alone placed in a condition worthy of the oldest and wealthiest dental society in the Kingdom, a good many delusions as to our state of dental darkness would be removed from the candid American mind. As most of you are aware, the acquirement of mechanical training and experience by dental students has, after many years, come to a condition of pressing necessity, and to meet this need of bringing the student and the mechanical treatment of a patient into a practical reality, the dental hospitals of London now undertake to make dentures for suitable cases. As mechanical dentistry has always been a subject of great interest and delight to me, I have been at some pains to visit the workrooms, or laboratories that have been designed for this most laudable purpose of thoroughly training dental students in this the all important groundwork of our profession, and with access to the patients for whose benefit their mechanical skill is to be exercised under the experienced direction of competent instruction. I have to confess to a feeling of very great disappointment when I saw how little practical grasp had been taken of the needs of a first-rate workroom, or laboratory, such as any public institution of the nature of a school should possess, and the poverty of invention with which the details of construction and arrangement are treated. Whether it be the fault of the architect, or of the dentist who planned these workrooms, they are far from being in any respect what such classrooms should be, if we regard the nature of the work to be done in them, and the nature of the lessons to be taught. Many of us can remember the extraordinary change that has taken place during the past twenty years in the practical teaching of physiology and chemistry for instance, and in no way more than the convenient benches or tables fitted with every needful reagent or appliance, we now see supplied, suited to the need of the student, the biologist or the professor. Can we not do the same kind of reorganisation in our dental workrooms, discarding all that is cumbrous and ineffective, and try to combine on the same bench the essential appliances and tools needful for metal work, soldering, grinding, or wax modelling, in such a way as to permit the student to work standing or sitting in easy and healthful positions, and thus supply in the most practical form every convenience for designing or carrying out accurate and artistic work? In too many dental workrooms, considerations of health and conveniences for work are neglected, and yet it is perfectly easy to combine diverse appliances in one bench properly constructed. In all these London workrooms you will find low benches with "places" that can only be used when sitting down in a cramped or stooped position; plaster benches large enough on which to cast a plaister model of the Apollo Belvidere, or the frieze of the Parthenon, ineffective arrangements for the convenient placing of tools, all directly leading to loss of time in moving about from place to place, inexact work and untidy habits, everything on top, and nothing at hand, like a midshipman's chest, That these arrangements are impracticable, antiquated and slovenly, most of us know who take any interest or pride in our workrooms; and it is sad to feel that the money spent in the perpetuation of useless and unworkmanlike methods could have been far more wisely expended had the real needs of the case been considered by whoever designed such impracticable rooms. If the lesson is not too late even now to be re-learned, our London friends would do well to visit the Technical School at Heriot's Hospital in Edinburgh, and see with what skill and practical good sense the needs of the different classes of boys and the mechanical subjects taught to them have been furnished. I must confess to have learned a good deal on this subject myself in the visits I have been privileged to make to this most valuable and progressive institution. When I assert that a dentist should be above all an expert workman—that no amount of time spent in scientific class-rooms will enable us to thoroughly master all the mechanical triumphs that have been won for ages past by craftsmen in the use of the hammer, the modelling tool, the file and the pliers, I trust the time is very near when the mechanical knowledge and training of the dental student will be as thoroughly tested by examination as any of the scientific subjects we find in the curriculum of study. Were the same rigid scrutiny given to the manner of holding and using a file in the shaping of a given form or shape, of making a metal plate, of taking an impression, of modelling an edentulous lower, of setting up the swivels and springs of a complete denture, as is now so excruciatingly applied to vascular zones, interglobular spaces, odontoblasts and enamel rods, at least fifty per cent. of the average candidates all over the Kingdom would be referred to their mechanical studies, to the great advantage of their patients and themselves. Practical dentists who can do their work skilfully and well, know how watchful we must be to escape pitfalls if each detail of our anxious work is to be carried to exact and certain results. And it is nothing short of a disgrace to our speciality that the mechanical knowledge and training, without which our efforts are fruitless, has been so much neglected by the licensing bodies, and especially in the London Schools of Dentistry that ought to be the best in the world.

The direct representation of Members of our profession in the General Medical Council, is a matter that is needful both for the Medical Council, and our own profession, and that we should be satisfied with less than three representatives on this Council seems to me an inadequate conception of the needs of our present and future. Were we given the opportunity, we could place in the Council three representatives equal in every way, both in education and practical knowledge of the questions involved, to any similar men chosen by the Government, the Licensing Corporation or the Medical profession ; and, that we should tamely sit out such an injustice for so many years, without making a resolute effort to assert our just right to take part in regulations affecting ourselves, speaks of a sad want of cohesion and thoroughness of policy in us as a profession I can only hope that serious attention will be given to placing this matter in a proper light at the coming Annual General Meeting in London in August next. The need of a code of dental ethics properly drawn up is still a pressing one, and, I am glad to see in some of the late editorials of the Dental Journals that it is a subject considered worthy of attention. This subject has been laid before the profession by Dr. Stack and myself at the Meeting in 1888, and at the Representative Board without much practical effect. From many circumstances that have come under my notice, our relations to the medical profession require to be taken out of the nebulous condition they are in at present and focussed with some precision. In many ways our relations with each other are far from satisfactory and happy, and although mere printed rules or regulations cannot be enforced, I have sufficient belief in the rapidly growing professional feeling of the younger men who have been educated in the dental curriculum of study provided for our speciality, as to feel that these needful restraints against dishonourable or dishonest practices will be loyally observed. I would hope that if you directed your Council to take this matter into consideration, and report at our next meeting of the Branch, or even within the year, that the result would be a good working code. Those who know would be confirmed in their ideal of professional intercourse and courtesy, while those who do not know might be gently led into the straight and narrow way of professional life. It does not fall to the lot of everyone to be reared in a refined and cultivated home where the courtesies of life are acquired instinctively and without effort, and there is therefore to my mind all the more need that we should endeavour to define on a broad and cultivated basis our relations to the public, the medical profession and ourselves, and do something serious towards developing the true instincts of professional life amongst all practitioners of our speciality.

The Irish Branch has observed with much pleasure that another branch has grown from the parent stem, and taken vigorous shape in London at a peculiarly opportune time. You will perhaps remember that no meeting of the British Dental Association was possible in Ireland till an Irish Branch was formed, so it is to be hoped that the Business Committee in London will not stand in the way of any of those members of the London Branch who may wish to do something more for the Annual Meeting than hand in cheques to defray the cost of the entertainments. Let us hope that the meeting will be of the best dental quality, worthy of the presidency of James Smith Turner, who has sacrificed so much of his life and leisure for our benefit and advancement. We in Ireland hail his occupancy of the Presidential Chair with hearty good wishes for his success in the discharge of the onerous and delicate duties of a position he has so worthily earned, and in earning a tribute of honour and respect from all members of the British Dental Association when he in his turn shall vacate it, all too soon.

We enjoy the great privilege of holding our meetings in this College by the courtesy of the President and Council ever since our meetings began, and we ought to make these opportunities for meeting so freely granted to us as interesting and profitable as possible to all who take part in them. The Council of the Branch has tried in every way to meet the wishes and convenience of the members who live outside our metropolis, and I hope that the policy of holding these meetings in the most convenient railway centre of the island, in the splendid rooms of the Royal College of Surgeons, as well as the opportunities for obtaining interesting material for discussion, will prove of service in forwarding our skill and knowledge in our profession, as well as promoting in the best way professional intercourse and courtesy.

We are sadly behind England and Scotland in not possessing any society for the study of diseases of the teeth and their treatment, and we should all the more readily embrace the only opportunity we have in Ireland of meeting together as members of a profession.

The Royal Academy of Medicine in Ireland has not a dental section to take the blue ribbon place of the societies in the sister kingdoms, nor do I think, for many years to come, the Academy a suitable place for the discussion of dental matters, the bulk of the fellows and members of the Academy being ignorant both of the limitations and resources of our art, and dental papers, no matter how literary or learned, fall rather flat without one word of comment. Might I suggest that each member of the Branch would gratify my successor, Mr. G. W. P. Murray, in the arduous labours he has so kindly taken off my shoulders by letting him know that he has resolved at least once a year to contribute a specimen, a report of a case, or a short paper to our meetings, and thus sustain a high professional interest in our meetings, and make his duties delightful to him instead of full of irksome details clogged with discouragement. We *must* rely on ourselves for whatever professional advance we can make in this island, and I would strongly urge this idea upon all the earnest members of our Branch, so that by a little self sacrifice and helpful action, our progress in professional life and thought may be sure. Having acted as your hon. secretary for over three and a half years in all the toilsome labour of working the Branch, as well as the organisation of the Irish Meeting, I can claim to have an intimate knowledge of your wants as well as your failings, and I therefore all the more cheerfully and confidently call on you all to support me in the discharge of the arduous duties of the Chair, as well as in promoting, as I have always done, the best interests of the Branch, by making our meetings worthy of the best traditions of our country and our profession.

THE PRESIDENT'S VALEDICTORY ADDRESS.*

By John A. Biggs, Esq., L.D.S.

Gentlemen,

When two years ago I accepted the Presidency of your honourable and scientific Society, I did so with misgivings and some trepidation, not unmixed with pride and hope. I felt proud that I should hold the office of President in the most distinguished Society of Dental Surgeons in Scotland, and that I should be elected to that high office by gentlemen with whom I have been in touch for over a quarter of a century.

It is like the wild imagery of a dream to look back to the year 1859, when I began my career as a pupil of Dr. Smith, and to the day when the dental dispensary or hospital was opened, and I stood on its floor its first and only student. To look back to that time and compare it with the present, I say is like a dream. How little things may not be despised is exemplified here. You have that small boy from this humble position now occupying the distinguished position of your President. You have that humble dispensary now a flourishing hospital, equipped in every respect, both as to staff, buildings, instruments and materials, to give it prominence as an efficient educational institution of which its country has good reason to be proud. I have held many offices in the course of my career, but none has given me more pride and pleasure, partly from my early associations—in this grand old crag-crowned City—with this Society, and for the love and esteem I bear towards many of its members. I accepted the office with trepidation, knowing well the able and distinguished men who have held the office before me, and being conscious of my own shortcomings. Yet I had hope that by your support and forbearance, I might after all be enabled to fill the office with some degree of credit to you and myself. "The proof of the pudding is the prein' o't." I will, therefore, dish the pudding in the shape of a *résumé* of the work done during my office, when you can form your own opinion of it. As usual the Session commenced with the opening address. Then we had a scientific paper on the "Missing Incisors in Man," illustrated, communicated by Mr. H. H. Edwards, of Madrid. Next we had a very practical communication on an improved form of sand moulding flask from Mr. Booth Pearsall, of Dublin, and demonstrated with the flask sand and models by Mr. McLeod. Then we had a capital paper from Mr. Wilson on the "First Premolar in the typical Dentition of the Placental Mammals." Followed by one from Dr. Symington on "Cleft Palate"—a remarkably scientific and valuable paper indeed, than which nothing could be more interesting and valuable. It was illustrated by frozen sections, and read by Mr. McLeod, to whom and Mr. Graham Munro we were further indebted for plaster models. I was glad for the sake of absentees to see a reproduction of it in the Transactions. Then we had a conversational meeting when Mr. Watson led off a discussion on antiseptics, which proved very good and useful, and in which a good number took part. After this Dr. Williamson started a discussion on combination fillings, which was freely entered into by the members present and very profitably. Then we had a demonstration on root filling by Mr. Stirling, of Ayr, the interest in which was manifest by a good attendance.

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* Delivered before the Odonto-Chirurgical Society of Scotland.

Mr. McLeod gave a demonstration on aluminium as a base for artificial teeth showing a German apparatus for casting, which was considered ingenious, followed immediately by a paper on irregularities of the teeth, with numerous models of cases operated on, and the various devices used, by myself. From time to time we had almost a plethora of cases of interest, they having sometimes to be hurried over. Yet, while so numerous, they were usually good and entertaining. One in particular seemed to excite the cupidity of the Press at large, as it was referred to by nearly every paper in the Kingdom, viz., "Bagpipe playing, and its effects upon the teeth," by Mr. McLeod; the session being brought to a close by a most enjoyable dinner.

The present session began November 13th, 1890, when a demonstration on Dr. R. Richter's glass inlay was given by myself. Dr. Williamson, of Aberdeen next gave a series of notes on the demonstrations at the Berlin congress. December 11th, 1890, we had Mr. Dall demonstrating a method of preventing dentures from slipping forward, in which all the members manifested deep interest.

The following meeting, Mr. Watson exhibited a number of microphotographs, illustrative of the dental tissues, both in their normal and pathological conditions, by means of the lime-light lantern, which was much appreciated. On February 12th, Mr. Watson again favoured us with a paper on the teeth of the Mesoplodon Layardi (illustrated). Mr. Platt, of Stirling forwarded a device for securing the rubber dam in the mouth without the use of clamps, and a jaw (lower) was exhibited, shewing various fillings amalgam, white, gold, glass inlays, gold inlay, crowns and pivots, by myself. And to-day we have a paper on "The hard palate in its relations to brain development," by Dr. Clouston.

During the first year of my office there was a larger influx of members than has ever occurred in any one year since the formation of the Society, not that I have influenced it in any way, but the coincident has arisen, and it is gratifying to me in the present session there is also an addition to our numbers (three). The Treasurer's report for 1890 showed a balance in hand of £103 3s. 1½d., which is most satisfactory.

I think that is a very creditable retrospect, and gives me confidence in the hope I had expressed that the Society should not suffer in vigour and prestige under my presidency. If that is your opinion, gentlemen, then all honour to your Secretary and the other office bearers who have strengthened my hands and enabled me to achieve so much. I here beg of them to accept of my best thanks ere I vacate the chair. May I say that it is about to be filled by one who from the first is entitled to our esteem and confidence, and under whom I have every assurance in the continued prosperity of the Society?

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Ordinary Monthly Meeting of the above Society was held on the 6th ultimo. Mr. J. S. Hutchinson, M.R.C.S., L.D.S. Eng., in the chair. The minutes of the previous meeting were read and confirmed.

Dr. A. W. W. Baker (Dublin), and Mr. J. H. Badcock, L.D.S. Eng., signed the obligation book, and were formally admitted to membership.

Mr. Octavius C. Meriam, D.M.D. Harvard, of Salem, Mass., U.S.A., was recommended by the Council for election as a corresponding member.

Messrs. C. A. Clarke (Forest Hill), S. A. Coxon (Wisbech), and Vernon Knowles (Reading), were balloted for and duly elected members of the Society.

The Librarian (Mr. Ashley Gibbings) reported that Mr. Worsley had presented to the library two books—interesting, as having been published nearly ninety years ago—one treating of artificial teeth, published in 1804, the other "The Natural History of the Human Teeth," published in 1803. The Smithsonian Report for 1888 had also been received.

The Curator (Mr. Storer Bennett) announced the presentation of two sets of models, one by Mr. Moon, of Croydon, of an exceedingly under cut bite, and one of cleft palate (the cleft being very large) by Mr. Biggs, of Glasgow : this was especially interesting on account of the excellence of the model, the upper parts above the soft palate being particularly well defined. Mr. Biggs had assured Mr. Claude Rogers, through whom the model had been received, that it had not been touched in any way.

The President said that the models would be passed round, and he would suggest that any remarks should be reserved until the close of the casual communications. He would call upon Mr. Penfold.

Mr. Penfold narrated the particulars of a case in which a movable mass of salivary calculus was tolerated for three years as an incurable tumour. He stated that the case presented some unusual features, one being that the masses were independent and fitted closely to one another, occupying the space between the cheek and upper maxilla on the right side. The patient suffered no pain nor inconvenience, and did not apply for dental help until she had something wrong with the right upper canine. She said that her medical man told her that the growth was a tumour, and it had somewhat that appearance. When examining the carious canine Mr. Penfold discovered a hard substance in the position already indicated and removed first one piece and then another with his finger. The second molar was in a horizontal position, a fact which the patient was unable to account for, but it might be possible that it assumed the position gradually.

The PRESIDENT then called upon Mr. W. H. COFFIN for a communication on "The Dentition of the Irish Giant, Cornelius Magrath"

Mr. W. H. COFFIN said that through the kindness of Professor Cunningham, of Dublin, he was able to show some photographs of the skeleton of Cornelius Magrath. Professor Cunningham in February brought some of the bones of this skeleton to this country and exhibited them to the Anthropological Institute on February 24th. He had to return immediately with the bones, and Mr. Coffin was unable to induce him to lend the jaw, for which, Mr. Coffin regretted to say, the photos were imperfect substitutes.

The interest lay in the fact that the lower jaw had continued to grow to a very large extent, and presented very similar characteristics to that shown by Mr. Sewill in 1889, when Mr. Jonathan Hutchinson described the symptoms of the rare disease "acromegaly." In this case, which might be described as an ultra gigantic growth of lower jaw, it was quite impossible to get any proper occlusion, but inasmuch as the molars showed signs of wear, Mr. Coffin thought it must be admitted that the disease had been progressive and not congenital, and this was also the opinion of Professor Cunningham. Mr. Coffin would only say, with reference to what Mr. Hutchinson said on that occasion as to the characteristics of "acromegaly," that the skull was not abnormal for the skeleton, nor the extremities; therefore the disease, if in pathological condition, was entirely confined to the lower jaw. There was also one other very peculiar characteristic of the teeth, viz., that the two upper central incisors were much smaller than the lateral incisors. Mr. Coffin drew Professor Flower's attention to this fact. Professor Flower was astonished, and came to the conclusion that the specimen had been "faked up" in some way, but Mr. Coffin could not satisfy himself that it was a case of postmortem implantation; he hoped some of the Irish members would be able to clear the matter up. The teeth appeared to entirely fill up the sockets as they should. Cornelius Magrath was a native of Tipperary and died in 1760, he enjoyed the reputation of being over 8 ft. high.

The PRESIDENT remarked that he thought the Society would support him in asking Mr. Coffin if it would be possible to obtain a plaster cast of the jaws.

Mr. W. H. COFFIN felt sure that armed with the suggestion of the President he would be successful in getting the casts.

Mr. G. BRUNTON (Leeds), being called upon by the President, showed two models taken from the mouths of two lads, brothers; the elder, aged 13 years and 11 months, had only three teeth in the upper jaw belonging to the second set, he originally had four, but Sequah took out one. The deciduous teeth were very much worn down. The absence of the permanent teeth was the principal point of interest. He had pleasure in offering the models for the museum. Mr. Brunton also mentioned a case—peculiar in his experience—of the early eruption of wisdom teeth: a boy aged 14½ years had two wisdom teeth on the left side in the upper and lower jaw. They were well through the gum, and had been erupted a year before Mr. Brunton saw him. The wisdom teeth on the right side were nearly through. The teeth were in a dirty condition, but were otherwise normal. Mr. Brunton also exhibited the following:—(1) some plaster basins for use in the surgery, made very simply, by dividing in half the hollow celluloid balls to be obtained at toy shops. (2) Nerve canal drills made of piano wire, and considered by Mr. Brunton much tougher on that account. (3) A method of drying root canals suggested by observing that certain insects had a proboscis which is not a tube but a grooved rod, and that moisture is withdrawn from plants with them by capillary attraction. He had made some paper points on the same principle and found that they acted very well indeed. The paper he used was Whatman's (employed for water colour drawings) saturated in 1 per cent. solution of bichloride of mercury.

Dr. A. W. W. BAKER, adverting to Mr. Coffin's communication, said that it was a very interesting one, and he should be very happy to render any assistance in his power in obtaining the desired casts.

Upon the invitation of the President

Mr. A. PEARCE GOULD, M.S., F.R.C.S., then read a paper on

"A CASE OF TOOTH PLATE IMPACTED IN THE PHARYNX: DEATH FROM SEPTICÆMIA."

The patient was a married woman, aged 40, of nervous temperament, but enjoying fair general health. For some time she had worn a small vulcanite suction plate bearing two artificial teeth, the right central incisor and the second bicuspid. Last year she met with an accident, and broke part of the plate; this impaired the suction action, and as a consequence the plate was not firmly fixed in her mouth. On January 3rd of this year she was cooking potatoes, and tasted one to see if sufficiently boiled; at that moment she was startled by hearing a knocking at the door, and she immediately felt pain in her throat, accompanied by difficulty in breathing—as she put it, she "felt as if she were strangled." She tried to vomit, and on putting her hand to her mouth she discovered that her tooth plate was gone. Her medical attendant was sent for, and gave her emetics, which succeeded in making her very sick, but failed to bring away the lost plate. He was also unable to seize it with the œsophageal forceps. On January 8th, Mr. Gould was called in, and found her sitting upright in bed, evidently in great distress, and only able to swallow liquids. She pointed to the region of the thyroid cartilage as the seat of the acute pain. Mr. Gould was unable to see the plate with the laryngoscope, but owing to the extreme irritability of the pharynx he was unable to make a satisfactory examination. He could not feel the teeth from the outside. He first passed a common umbrella-probang, but it brought nothing away. Then he passed a coin catcher, and on withdrawing it it caught in the edge of the plate, but he was quite unable to extract it, it was so fixed that it resisted even considerable traction. This he repeated many times; resort to pharyngeal forceps was attended with no better result. After persistent efforts for more than an hour, Mr. Gould felt bound to desist, and advised that the patient should be sent into the hospital; she was accordingly admitted under his care the following day. She then stated that since Mr. Gould left her the plate had dropped down her throat, and was lower than before. She lay in bed on her right side, and breathed in some difficulty; her temperature was 99·8°. Within an hour or two after admission she was taken to the theatre, and chloroform was administered, the mouth was opened with a gag, and a forceps applied to the tongue. A small gum bougie was gently passed down the œsophagus, but the plate was not felt. A whalebone probang with an ivory end—first a large one and then a small one—was also passed, but no plate could be felt. A vertebrate probe gave a similar negative result. He then tried to find the plate with the coin-catcher and the forceps he had used the day before, but could not seize it. As the plate appeared to have passed down, Mr. Gould determined to pass a full-sized gum bougie gently on into the stomach if possible; this he did, the instrument passing 17 inches from the teeth, but it was not so free in the gullet as normal. However, it was concluded that the plate was probably in the stomach, and it was therefore resolved to return the patient to bed, to feed her when possible on milky food, and wait on events. The temperature on the evening of that day was 101·6°. From the 9th to the 15th January the condition of the patient was one of pain and restlessness, relieved with slight intervals of apparent improvement, temperature ranging from 99° to 102°. About 1 p.m., January 15th, she was seized with most intense pain in her right hypochondrium, which was only gradually overcome by morphia. On that day her breath was noticed to be sweet; temperature 100·4°. January 16th, the patient was in a clammy sweat, unconscious, with hurried breathing, very rapid running pulse; the urine contained $\frac{1}{3}$ vol. of albumen. The temperature gradually fell, and at 6.30 p.m. she died. The medical treatment adopted consisted of three things, viz., morphia, to relieve the severe pain; quinine, to combat the septicæmia; and brandy, as a stimulant when the heart's action began to fail. A *post mortem* examination was made, and the following is an extract from the report:—

"Pharynx and œsophagus removed together. On opening these, a composition plate with two artificial teeth attached is found impacted in the left wall of pharynx, near junction with œsophagus. One tooth is right through the wall, lying in abscess cavity containing offensive pus, and extending downwards by a long sinuous track of suppuration (not more than a quarter to half an inch wide) along the left side of œsophagus, passing behind the aorta, or into the posterior mediastinum, where it deflects to the right and opens about the middle of the thorax into the right pleural cavity by an aperture about two lines in diameter. The plate lies with its concave surface on the back of the larynx (arytenoid and cricoid cartilages), the teeth attached being just at the commencement of the ary-epiglotidæan folds. Beneath the plate the mucous membrane of the pharynx shows one or two recent ulcers. Where the tooth and plate had perforated the pharynx the wall is gangrenous, showing ragged ulceration. The *right pleura* contains about 90 ozs. of thin and very offensive pus with three yellow oval masses the size of a bean, which look like the yolk of an egg inspissated—presumably food. The pleura is covered with recent lymph, and the lung is collapsed and completely airless. On lifting up the liver, the *duodenum* tears away from a recent attachment to it on the left lobe, the surface of the liver being gangrenous over an area one and a half inches across, and a quarter of an inch deep. The *duodenum* attached to the liver is completely perforated by a circular ulcer one and a half inches in diameter. On opening the gut the ulcer is seen to be a clean perforatian through the walls, no thickening or bevelling of edges. Near it is a slightly smaller acute erosion of mucous membrane, and below it are two similar erosions transverse in direction, about a quarter of an inch long, by one-eighth of an inch broad."

Commenting on the facts, Mr. Gould said that the plate was evidently impacted at first in the lower part of the pharynx, behind the cricoid cartilage, the most likely place of all for a large and irregular substance to be arrested in its passage to the stomach, and there it gave rise to the usual distressing symptoms. The attempt to remove it failed, and an interval of six days—owing to the reluctance of the patient and her husband to have further advice—was allowed to elapse before any further attempt was made. This, Mr. Gould considered, was the cardinal fault in the treatment, for during those six days, the sharp points of the teeth and plate were not only pressing against the delicate mucous membrane, but with each effort of deglutition, the constrictor muscles contracted on the plate, and forced these sharp points deeper and deeper in. From this ulceration of the pharynx, two ill results followed: first, a tooth passed into the ulcer, and so fixed the plate, that when seized, it was impossible to extricate it, though some force was used. In the second place, the ulceration of the pharynx was the starting point of a septic suppuration outside the gullet, which by direct extension led to the septic empyema, and also to more remote septic changes, ulceration of the duodenum. Another important fact was the failure to find so large a foreign body in the pharynx, a fact which should make the surgeon particularly cautious in deciding upon the absence of a supposed foreign body. The explanation of the failure, Mr. Gould thought interesting, and in his opinion was, that in the interval between his two attempts, the plate shifted its position a little, and in its new place fitted accurately over the back of the cricoid cartilage, so that it scarcely projected into the pharynx at all, and that then the swelling of the mucous membrane around it covered in the edges of the plate, and caused even a coin catcher to pass over it without detecting it. The exceptional pathological phenomena were a long sinuous line of suppuration—but no abscess—which progressed with fatal precision, until it infected the right pleura and septic ulceration of the duodenum. The symptoms of the fatal malady were also rather marked ; fever existed, but it did not run high—there were no rigors, no swelling in the neck—nothing in fact to direct attention to what was actually going on. One other remark Mr. Gould desired to add, he thought it probable that at the time the patient came into the hospital, the fatal process was so far advanced already, that mere removal of the tooth plate would have been a barren triumph, and that he should have had to record her death from septicæmia. Of this he could not be certain, but the speedy onset of the pleurisy, and the undoubted existence of the pharyngeal ulcerations for a day, or perhaps longer before that, inclined him strongly to that view.

The PRESIDENT felt sure that the Society would heartily concur in thanking Mr. Gould for his valuable paper. Before making any remarks he would like to ask if there were any hooks or wires on the plates ?

Mr. PEARCE GOULD replied that there were not.

The PRESIDENT continuing, said that the paper seemed to divide itself into four heads, the popular point of view, the dentist's point of view, the surgeon's point of view, and the pathological point of view. Mr. Gould had referred to Mr. Felix Weiss's paper, which was one of great interest, but the President thought that the paper which they had just listened to, would add considerably to their knowledge of the question. The popular aspect of the case seemed to be that, people wou'd persist in disregarding the danger attendant upon wearing insecure dentures, and continue to wear them after the fastenings had been broken. Mr. Gould had pointed out the duty of the dental surgeon to draw attention to this danger, so that he (the President) need not further enlarge upon it. The next point was, that an examination of the pharynx revealed the fact that the plate was imbedded at the back of it in such a way that it could not be dislodged. The pathological results which followed were extremely interesting, and pointed to the necessity of treating these cases on their first onset. Mr. Hutchinson would like to ask if it would have been possible to ascertain from the patient the shape of the plate, and the material on which it was constructed, and whether it would have been possible to break the plate in its position in the throat, with the forceps?

Dr. DUDLEY BUXTON narrated a case which illustrated one of Mr. Pearce Gould's points, viz., the difficulty there often was in making certain whether or not the plate is still in the pharynx. A young man was admitted into a provincial hospital and Dr. Dudley Buxton was able to strike a plate in the pharynx, but not on all occasions, and others failed to make out its existence. However, it was finally decided to perform œsophagotomy, but before this was done a member of the consulting surgical staff passed forceps, and although repeated prolonged efforts had previously been unsuccessfully made, this gentleman succeeded in withdrawing the denture through the mouth. Another point was the use of emetics, which Dr. Dudley Buxton would most decidedly deprecate. It had once been his duty to read a communication from a medical man describing such a case of impaction of a tooth plate, in which the author rather prided himself upon having employed emetics and thereby succeeded in recovering the missing denture. In Dr. Dudley Buxton's view vomiting should be carefully avoided, as if true impaction existed there was grave danger of hooks or sharp edges lacerating the mucous membrane. The President had suggested the use of a lithotrite for crushing the plate; Dr. Dudley Buxton had been told by Mr. Buckston Browne that he had more than once used a lithotrite as a substitute for œsophageal forceps.

Mr. C. V. COTTERELL suggested that if the material of the plate had been doubtful, its being made of metal or not might have been decided by the aid of an electric battery, for if one pole were connected with a galvanometer and the other with the exploring instrument the contact of the latter with a foreign body of metal would be indicated on the galvanometer.

Mr. W. B. PATERSON said that while looking at the specimen it had occurred to him that the plate did not seem to him to be beyond the range of vision aided by a speculum, laryngoscopic mirror, and electric lamp. The plate being once seen he presumed that œsophagotomy would have been decided on.

Dr. JOSEPH WALKER related two cases in his experience, treated differently, but both with happy results. The first was that of a female who swallowed a gold upper denture, she felt no inconvenience and only slight pain. Dr. Walker avoided emetics, and prescribed oatmeal drink. On the eighth day the entire denture, uninjured and buried in a glutinous mass of oatmeal, was evacuated through the rectum. The other case was that of a policeman in Westminster, who swallowed a denture consisting of four teeth, with gold clasps round the canines, mounted on a heavy gold plate ; he was inverted and in about ten minutes the gold plate rolled out of his mouth. In conclusion Dr. Walker desired to thank Mr. Gould for his paper, which he regarded as educational from its first note to its close.

The PRESIDENT remarked that the important and most interesting point which had arisen in the discussion seemed to be as to the value or otherwise of emetics, and he would be glad to hear any other members who had had experiences similar to Dr. Walker's.

Mr. C. V. COTTERELL stated that in 1879 he took a practice down at Rochester, where a patient had just swallowed a platina plate that held three or four teeth which were retained simply by a pivot pin in the root of the central teeth. It had very sharp points, the collars were cut up to points to go between the teeth, and the pivot pin, he would say, was $\frac{3}{16}$ to $\frac{1}{2}$ inch long—it went from the lateral to the first or second bicuspid. The doctor in this case recommended emetics, but the dentist, Mr. Robertson, since dead, prescribed oatmeal and chopped worsted, and the prescription was followed ; in five days the plate was passed without the slightest trouble.

Mr. BRUNTON said that the case which formed the subject of Mr. Gould's paper seemed a most interesting one. The point which struck him was this, did Mr. Gould seek the assistance of a dentist in trying to find out the probable size, shape and nature of the denture ? It seemed to Mr. Brunton that it would have been a considerable help to have had the assistance of a dentist.

Mr. PEARCE GOULD, in response to the invitation of the

President, said he would reply first to the last speaker; he did not, as he ought to have done, no doubt, seek the help of either of his dental colleagues. Mr. Hern was in the hospital while the patient was on the operating table, but Mr. Gould did not ask him specifically about the size or nature of the plate. There was this point about it, he (Mr. Gould) had found the plate once, and expected to find it as easily again, not doing so he was perhaps taken a little off his guard. With reference to breaking the plate, it had been his intention to do so if he could have seized it with the forceps, but not seizing it, the question did not arise. He would add that he should think it would be a difficult matter to break it in that position. Dr. Buxton had spoken about giving emetics; well, Dr. Buxton was well aware that emetics had been given without good results, and without serious results. Personally, although he did not think emetics were of much good, he did not think any harm could follow when anything could be swallowed—he would not recommend apomorphia injection. Then as to the suggestion for detecting metal plates, there could be no doubt that under certain circumstances it would be possible, but this not being a metal plate the question did not arise. Mr. Paterson put a very pertinent question as to the possibility of seeing the plate. The first thing Mr. Gould did was to try and see it; the second time he omitted to do so, and no doubt would have been better advised had he acted otherwise.

The PRESIDENT announced that at the next meeting, May 4th, a paper would be read by Mr. D. E. N. Caush, L.D.S., on "Exostosis," with microscopic slides and photographs, and casual communications would be made by Messrs. J. Bland Sutton, Morton Smale, J. Stocken, D. Hepburn, and C. V. Cotterell.

The usual votes of thanks concluded the meeting.

Students' Society, London Dental Hospital.

ORDINARY General Meeting, held March 9th, Mr. E. LLOYD WILLIAMS, President in the Chair. The minutes of the previous meeting were read and confirmed.

The PRESIDENT called for casual communications.

Mr. COLYER said he had been asked by Mr. Smale to see a remarkable case at Westminster Hospital: it was that of a young boy who had tumbled out of a window and fractured his lower jaw just behind each canine. He took a model of the jaw as it was, and sawed through the lines of fracture and made a vulcanite splint so as to fit it when it was reduced ; however, when they came to try to get the fragments into position they were unable to do so though they used considerable force, and at last were compelled to leave it as nearly right as they could get it ; the displacement was about a quarter of an inch.

Mr. PARRIS showed a left upper wisdom tooth with four distinct roots from a man aged 27, and a geminated lower temporary lateral and canine.

Mr. COLYER remarked that he had a model with a geminated temporary lateral and canine on each side.

Mr. CASTELLOTTE related a case of a patient, a girl aged 18, who had no bicuspids or molars in the upper or lower jaw, and with one upper temporary canine and two lower temporary incisors standing.

The PRESIDENT then called on Mr. C. S. Reid for his paper on "The various methods of retaining artificial dentures in the mouth." (See page 203).

At the conclusion of the Paper the discussion was opened by Mr. RANKEN, who said Mr. Reid laid stress on clasps, but he thought you ought to do without them wherever you could. He advocated the use of gum tragacanth as a great assistance in keeping up plates.

Mr. PRICE remarked that in his experience the most difficult pieces to keep up were those with perhaps one canine standing : you got neither good suction nor support from clasps. He advocated the use of vulcanite rings round molars standing alone.

Mr. GILLETT thought that vulcanite rings caused decay just as much as bands. He did not see any difficulty in making a band fit the neck of a tooth.

Mr. COLYER remarked that he was very pleased to see new members taking part in the discussion. He said bands caused decay because food collected and decomposed and formed acid. He always showed his patients how to clean them by winding a little cotton wool round a match and also use an alkaline solution ; for undercuts he advocated the use of soft red rubber, which gives and springs back again.

Mr. LLOYD WILLIAMS, remarking on Mr. Dall's paper, was surprised at him drilling into alveolus for the reception of the pin.

He thought it was a failure. With regard to the other part of his paper he had tried two cases lately with two or three pins in and they had done well ; he could agree with Mr. Reid as to bone being formed round the pin, but thought the sockets filled with fibrous tissue. With regard to ridges they should be sharp not blunt : if they were sharp they caused little or no pain, but if they were blunt they did. Gum tragacanth he thought was at any time unjustifiable, and would not be required if gentlemen took good plaster impressions. He thought bands nearly always unnecessary in vulcanite cases, but if they were used you ought to be more careful about polishing the inside than the outside.

Mr. Woolf mentioned a bridge case of a missing central with a pin up the lateral root and a hole drilled into the central to receive the bar. The case had now been in three years and was quite loose and the lateral root nearly out.

In reply to Mr. Rankin :—Gum tragacanth is very good for the purpose of assisting the suction of a plate until the patient becomes used to it, but it cannot very well be looked upon as a means of retaining the plate permanently.

Mr. Gillet :—The bands might easily be fitted to the contracted necks of canines, but there would be great difficulty experienced in passing them over the enlarged portion when they were soldered or fixed to the plate.

The President :—Although I have seen many plaster impressions taken by men who are considered clever in the profession, I cannot say that I am favourably impressed by them, and think that a good modelling composition, carefully used, gives quite as good results, with much less inconvenience and unpleasantness to the patient.

Odonto-Chirurgical Society of Scotland.

The Annual General Meeting, Session 1890-91, was held on March 13, 1891, in the rooms of the Society at the Dental Hospital, Edinburgh—Mr. John A. Biggs, President, in the chair.

The Treasurer's (Mr. Mackintosh) report showed an income of £41 2s. 10d., derived from subscriptions, entry money, interest on bank account, and deposit receipt. This, with a balance of £25 3s. 1d. from the previous year, and a deposit receipt of £105, made a sum of £171 15s. 11d. After deduction of expenses, a balance of £143 5s. 11d. remained, representing the entire funds of the Society.

The Curator and Librarian (Mr. J. STEWART DURWARD) in the course of his report referred to a want of interest shown by the members in the library. As a result of a discussion initiated by Mr. Campbell, it was formally proposed by Dr. Williamson, seconded by Mr. Macgregor, that a list of books now in the possession of the Society should be published and issued to the members, and that an appeal should accompany it, asking for donations of books and magazines, and also that the Council should resolve themselves into a committee to consider the desirability of acquiring new books by purchase, to augment the present collection. The motion was carried.

Mr. CAMPBELL proposed, and Mr. WILSON seconded, a motion to the effect that in future the Ordinary Meetings of the Society should commence at 7.30 instead of 8 o'clock, in order to facilitate the attendance of members from a distance. The proposal was put to the meeting, and carried without dissent.

The following gentlemen were proposed by Mr. Campbell as office-bearers for the ensuing year. Mr. Macgregor seconded, and the election was unanimous.

President, Mr. G. W. Watson ; Vice-Presidents, Messrs. J. Stewart Durward and J. Stirling ; Treasurer, Mr. James Mackintosh ; Curator and Librarian, Mr. J. Graham Munro ; Secretary, Mr. J. S. Amoore ; Councillors, Messrs. Rees, Price, Biggs, Wilson, and Macleod.

A vote of thanks to retiring office-bearers was given by Mr. Macleod, and was cordially received.

Dr. T. S. CLOUSTON then read a paper on "The Hard Palate in its Relation to Brain Development," being in substance a part of a series of lectures (the Morrison) recently delivered by him before the Royal College of Physicians. The paper was largely illustrated by diagrams, models, and specimens.

Dr. CLOUSTON concluded with an expressed hope that the members would give the subject their consideration, and further, with their observations, the knowledge already acquired for which they possessed such ample opportunitier in the course of their daily practice.

Messrs. Watson and Wilson and the President joined in the discussion which followed, and Dr. Clouston received and acknowledged the hearty thanks of the members accorded to him for his kindness in bringing the matter before them.

The retiring President, Mr. JOHN A. BIGGS, gave his valedictory address.

Mr. G. W. Watson then moved into the presidential chair, and the proceedings terminated.

In the evening the members of the O.C.S. and the L.D.S. dined together in the Balmoral Hotel, Mr. J. Moore Lipscombe presiding, Mr. W. Dall officiating as croupier. There were 34 present.

Dental News.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.

DURING the April sitttngs of the examiners the following gentlemen passed the First Professional Examination :—Robert Lindsay, Edinburgh ; Thomas Nash, Edinburgh ; Thomas Evans Johnston, Carnbee, Fife ; Alexander Young, Halifax ; James Joshua Martin, Bradford ; Henry Perkin, Dewsbury ; and John Malcolm, Edinburgh ; and the following gentlemen passed the Final Examination, and were admitted L.D.S. Edinburgh :—John Maxwell Wood, Dumfries ; Robert Nasmyth Hannah, Edinburgh ; Joseph Douglas Stewart Shepherd, Edinburgh ; Murray Thomson, Edinburgh ; Sewell Simmons, Liverpool ; John Alexander White Kirkpatrick, Leith ; William Herbert Dennis, London ; and John McLaren Mason, Edinburgh.

A Dentist's Slander Case.

IN the High Court of Justice, on Tuesday, Mr. Justice Vaughan William and a jury, heard the case of Girdler v. Germer, which wss an action by Mr. A. T. Girdler, dentist, of 469, New Cross Road, against Mr. Charles Germer, baker, 41, Jerningham Road, New Cross, for alleged slander. Mr. Cock, Q.C., and Mr. Cecil Chapman appeared for the plaintiff, and Mr. Hansell for the defendant.

Mr. Cock said that prior to August last Mr. Girdler made a set of teeth for defendant's mother, for which she paid three guineas. They subsequently required some little alteration, which he made, as he (Mr. Cock) understood, to the satisfaction of everybody. Defendant's mother, however, was in a bad state of health. and she got the impression that her ill health was due to the teeth. She consulted a doctor, who told her there was nothing the matter with the teeth, but that her indisposition was due to other causes. That did not satisfy defendant. who on the evening of August 27th came to plaintiff's house, while he was engaged professionally with a lady, the wife of a medical man. It was on that occasion that the alleged slander took place. On this action being brought the defendant instructed his solicitor to bring a charge against the plaintiff of professional negligence, in respect of the teeth supplied to his mother. That action Mr. Germer now abandoned.

Mr. Hansell said defendant had nothing to do with that action, it was his mother's.

Mr. Cock said his client did not wish to make money out of this thing. What he asked was either an expression of regret on the part of the defendant, or else such fair and reasonable damages as would enable him to say that when he swore. that there was no foundation for the defendant's statement, the jury believed him, and shewed their belief by their verdict.

Plaintiff said he had carried on his practice for 20 years. He made the teeth referred to in May, and received no complaint of them. On August 27th defendant came to his house, giving the name of Smith. Whilst witness was engaged in his operating room, stopping a lady's teeth, defendant came thumping at the door of that room. The noise became worse, and witness opened the door. Defendant said he must see Mr. Girdler, but witness said Mr. Girdler was engaged, and he must see one of the assistants. Witness called one of his assistants to see what defendant wanted, and ordered him out of the place. After the lady had gone witness asked defendant how he dare interrupt him while he was engaged professionally. Defendant replied, "You engaged professionally. You were playing about with that woman you had inside." Witness seized the defendant by his coat, banged his head against the wall, and dared him to repeat the remark. Defendant said, "Don't hit me," which cooled witness, and he asked defendant what he wanted. Defendant said he wanted a receipt for the three guineas which his mother had paid. Defendant further said "You are a cheat. You have cheated my poor old mother, and I will show you up in the papers." This remark, like the previous one, was made in the presence of witness, two assistants, and his lad. Witness told one of the assistants to prepare a receipt, but as he was still annoying, witness shewed him out. Witness had since found much difference in his business, so far as casual patients were concerned.

Mr. Hansell cross-examined the plaintiff with a view to showing that his practice had not fallen off.

Ed. J. Steady, late assistant to plaintiff, and Thos. Conolly, the lad, corroborated, stating that defendant was first seen by the former, who showed him into the waiting room.

Mr. Hansell contended that it was absurd to say that any damage accrued to defendant through whatever was said in the presence only of his employés. Further, defendant absolutely denied that he ever used the words complained of.

Defendant said he gave the name of Smith because he thought it would facilitate an interview, his mother and other relatives having been several times before. Witness waited nearly an hour before he knocked at the door of the operating room. He did not use the words ascribed to him. He said to plaintiff that he heard him talking to a lady inside, and he also said "You ought to be ashamed of yourself for treating my old mother as you did."

His lordship told the jury that if they found the words were spoken of the plaintiff as to his conduct in his business room, then it must be taken that special damage was not of the essence of the case. The jury found for the plaintiff, damages £10, and his lordship gave judgment, with costs on that scale.

THE DENTAL RECORD, LONDON: MAY 1, 1891.

THE FORTHCOMING CONGRESS OF HYGIENE AND DEMOGRAPHY.

LONDON is likely to possess many special features of interest to visitors this summer. The Annual General Meeting of the British Dental Association will no doubt bring many of our provincial friends to town, and while they are making their plans we may remind them that on August 10th will commence the Seventh International Congress of Hygiene and Demography, which will hold its session at Burlington House, Piccadilly, and will, we are assured, afford solid matter for interest and instruction. Although upon the first blush this Congress may appear to have more to do with other branches of the profession than ours, yet fuller consideration will reveal that dentistry in its relations to State or Preventive Medicine comes into the closest relation with Hygiene and Demography, or the study of life conditions of communities from statistical points of view. Under the Presidency of H.R.H. the Prince of Wales, the Congress will consist of two divisions: I. Hygiene, which will be taken to comprise—(1.) Preventive Medicine; (2.) Bacteriology; (3.) Relation of the Diseases of Animals to those of Man; (4.) Hygiene of Infancy and Childhood; (5.) Chemistry and Physics in Relation to Hygiene; (6.) Architecture in Relation to Hygiene; (7.) Engineering in Relation to Hygiene; (8.) Naval and Military Hygiene; (9.) State Hygiene; and II. Demography, which will comprehend Health Statistics, and Industrial Hygiene, and Demography proper. The Presidents, Vice-Presidents and Secretaries are selected as being conspicuously able in the lines of their particular section, and constitute a strong phalanx of progressive sanitarians and statisticians. The various learned societies, colleges, corporations, etc., etc., will be represented; the Odontological Society by Messrs. Howard, Mummery and

Henry Sewill, and delegates from the uttermost parts of the world will attend. The feeling of cordial approbation which greeted the suggestion mooted in 1889, in Paris, that foreign Hygienists should join us in London in 1891, leaves little doubt that Europe and America will be largely represented, and it is proposed to add the names of illustrious foreigners to the list of Vice-Presidents before the final announcements are issued. In the sections of Bacteriology, to which scientific dentistry owes so much, there ought to be some interesting work done for and by dentists if their modesty will only permit them to take a part in this most important meeting. In the section of army and naval hygiene the reasonable and ably advocated claim which Tommy Atkins and Jack Tar have had put forward on their behalf by dentists, and notably by Dr. Cunningham, of Cambridge, should again be advanced and brought upon this, the widest horizon of the sanitary world. The sections devoted to the Hygiene of Childhood and Infancy, and the Relation of the Diseases of Animals to those of Man again afford topics which fall within the province of the dental surgeon, and should give rise to much interesting discussion. The offices of the Congress are at 20, Hanover Square, London, and the fullest information can be obtained from the Secretaries, if sought there. We are glad to see that among the supporters are several well known dental surgeons, and we shall hope that when the matter is more thoroughly ventilated still fuller support will be rendered by the profession of dentistry. All persons interested in the work of the Congress—and who is not?—are eligible for membership, and of course the larger the number of persons who become members the easier is the work of the organizing committee, and the greater the success of the Congress. It is probable that there will be special facilities for studying practically some of the large sanitary works of the Metropolis, to which visits will be organized.

REVIEWS.

MANUAL OF DENTAL EDUCATION. By Arthur Turner, L.R.C.P.E.; Edinburgh, E. & S. Livingstone, pp. 72.

THE practical advice in this Manual is to be found in any of the kalendars of the various dental schools that exist throughout the kingdom: that which is addressed to parents or guardians may be useful to those who are undecided as to the advisability of educating their sons or wards as dentists, but to those who have already entered upon their educational career, it will be of little or no value. A chapter headed "What qualities are required" is amusing, for instead of describing the qualities that the fond parents must look for in their progeny. a long dissertation is given on "an ideal dental surgeon." The description is that of a fully developed character that could be found only in a man after many years of self-culture and self-control, and yet withal one can fancy some parents thinking how exactly the description fits their son. A child whose character was really described in that chapter, would, to say the least of it, be a young prig. If this chapter were cut out, and a few remarks substituted to the effect that any youth of ordinary mental and physical culture could, with care, be made into a skilful and successful practitioner, it would be of more value to readers. The chapter by Mr. F. W. Foat is good, and yet we have known many a youth become a first-rate dentist who, at sixteen years of age, had little or no aptitude for botany, physiology, or mechanics. This may arise sometimes from faults in the teachers of these subjects, rather than from inaptitude in those taught. Under "Advantages of the Profession," we are told that one of its disadvantages is the possibility of "contracting certain inoculable diseases." The risk run in this direction is about on an equality with the danger the same person incurs of being killed by accidents. When dealing with the practical part of the education, it is very evident that the author is not familiar with the curricula of the various colleges. It is of course difficult in the space that we can devote to a review of this small manual, to call attention to every inaccuracy or unwise piece of advice, or, as in some instances, absence of necessary advice; but nowhere is the student advised to take advantage of the new regulations of the English College, that permit the student to take chemistry and materia medica during his pupilage, which necessarily allows so much more time for the acquirement of practical dexterity in operating. While the advice with regard to anatomy is meagre, to say the least of it. It is also of perhaps the smallest anatomical importance to the dentist to be told "The student should thoroughly understand the different kinds of joints and their mechanical action." The recent alterations in the curriculum of the Irish college will necessitate some considerable corrections in the book as it at present stands To a statement about a post-graduate course in America we take distinct objection, viz., that a student taking such a course returns with "a greater skill in gold-filling." A student educated in this country who has taken advantage of the best teaching in this method of operating, is well able to hold his own against those taught in any nation.

Journalistic Memorabilia.

A Plea for the Illustration of Lectures by the Projection Lantern.

By Dr. McIntosh.

In the Dental Register.

I think I am safe in making the assertion that teachers in all departments of study see the necessity of illustrations. Abstract teaching alone, either by lectures or recitation, fails to produce as permanent impression on the student as it does with illustrations.

The use of every scientific instrument and process, to be clearly understood, should be demonstrated and illustrated. Unless illustrations accompany the description, the idea is only partially comprehended.

I believe there is no way of illustrating as easily, clearly, and cheaply, a great part of the lectures in science, medicine, and dentistry, as by projection. We have at our command very perfect apparatus for this line of work; we can use diagrams, photo-micrographs, micro-photographs, microscopic specimens, opaque objects, chemical reactions, crystallization, polarization, &c., to large classes, as easily as to one person.

This method of projection is not confined to transparent objects. Opaque objects as well can be magnified and projected on a screen. The principle is not new, but its application to a projecting microscope we believe is.

We trust that the time is not far distant when typical objects properly arranged in sets, both photographic and microscopic can be as easily obtained as text books on the various scientific subjects. The teacher will then have his notes before him in his illustrations. He can abridge his lectures. This being accomplished the poor student will not feel that he is being talked to death.

Here is the formula for a local anæsthetic which is good, but I do not advise injecting it into the tissues :—

℞.—Cocaine mur ...	gr. xxxv.
Ol. menth. pip ...	℥ ss.
Tr. aconite ...	ʒ iij.
Sulph. ether ...	℥ ss.
Chloroform ...	ʒ v. ♏.

Dr. Gillman, in *Items of Interest*.

THE DENTAL RECORD.

VOL. XI. JUNE 1st, 1891. No. 6.

Original Communications.

ON THE USE OF STEEL WIRE IN THE TREATMENT OF IRREGULARITIES OF THE TEETH.

By H. LLOYD WILLIAMS, M.R.C.S., L.D.S.,

Dental Surgeon to the West London Hospital.

FOR many years the spring steel wire has been gaining favour as an adjunct to other methods of regulating the teeth, and in this paper an attempt is made to place as lucidly as may be a few of the modes of applying the wire.

For clearness it will be most convenient to refer to (1) Coffin's Springs; (2) Side Springs; (3) Coil Spring.

1. Many years back Mr. Coffin described a method of expanding the jaw by means of the steel wire, and his method has been adopted and has been called after his name.

A piece of wire (No. 14 has been found most useful) is bent by means of round-nosed and flat pliers to the shape shown in Fig. I.

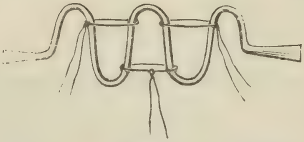

Fig. I.

The length of the arms will always be regulated to some extent by the depth of the palate; it is known that by lengthening the arms a greater spring is obtained, but at the sacrifice of strength, therefore a moderate length of arm is the more effectual, and the same length approximately is applicable to most of the cases met with The flattened side arms are for insertion in the wax, and must be so adapted.

When the wire has been bent to the shape indicated, the bows are brought together with binding wire (shown in position in the figure), the two ends of the binding wire after twisting are separated widely and left rather long.

The spring is now ready for insertion.

It will be observed that no direction has been given to bend the spring to conform with the shape of the palate, and this should never be done. The best way of inserting the spring undoubtedly is to place it as nearly as possible at right angles to the axis of the arch. The lateral pressure will be truer and more evenly diffused, and the expansion of the springs from time to time will give the operator the minimum of inconvenience.

The position of the spring must be decided on the merits of each individual case, as a broad general rule, however, it should occupy a position opposite the first bicuspids. The spring standing perpendicularly in that position a large space will be left between it and the palate in front, this is filled with wax to the level of the top of the spring, the wax from the spring to the incisors being made flat and smooth.

No particular trouble need be taken to remove the wax from the spring, which after the previous stage would certainly cover it, so long as it does not project beyond the spring. The cut ends of the binding wire will anchor the spring safely in the reverse.

The piece is now flasked ; the flask is heated to soften the wax and then separated.

The next step is a most important one, for on it the success of the plate will entirely depend.

The plaster around the spring (Fig. II. A) is roughened slightly

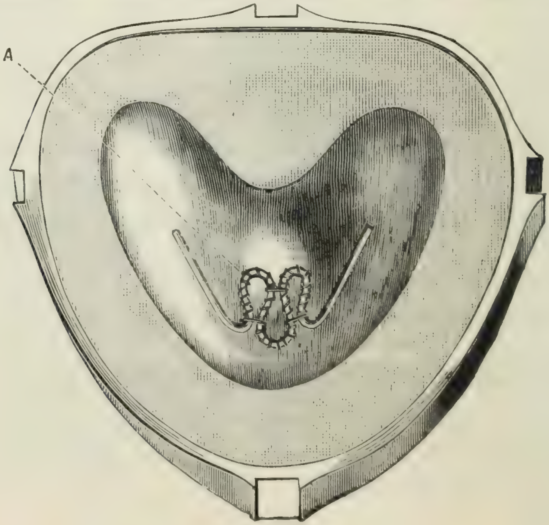

Fig. II.

if necessary, and fresh plaster, mixed very thin, is added until the spring is completely covered, the operator while adding the plaster aims at making a flat surface of vulcanite for the spring to play freely upon. The part of the spring to be covered is shown lightly shaded in the figure. Coffin plates always present difficulties in polishing, but by the adoption of this plan those difficulties appear to be diminished.

2. It is generally admitted that continuous gentle pressure is less harmful in the treatment of irregularities than intermittent pressure which always has to be somewhat severe while it lasts. The Coffin spring is, next to a rubber ring, the best example of the application of the principle of continuous gentle pressure in the regulation of teeth, and by modifications this spring is capable of wide application.

For drawing back bicuspids and canines, an adaptation of the principle of the Coffin spring has been found to be very useful and applicable to the great majority of the cases which present themselves for treatment.

The spring is turned in precisely the same manner as for a Coffin spring, regard being had to the depth of the sulcus; the spring should not project below the cutting surfaces of the teeth.

Long arms are left on either side of the spring, one for insertion in the wax, and the other to be fitted round the neck of the tooth which is to be moved. It will be found generally convenient to make the straight arm from the spring to the tooth short.

When describing the insertion of the Coffin spring, the spring was directed to be closed by means of binding wire; in this case, however, the spring is left widely open. The power here is produced by approximating the arms of the spring from time to time until they cannot be closed further.

This spring is shown applied to a canine in the drawing Fig III.

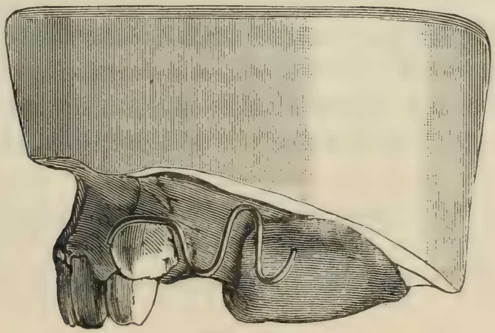

Fig. III.

3. A very effective mechanism, by means of which bicuspids can be pushed backwards, as after the extraction of first molars, is made by bending the wire round one arm of a round-nosed pliers a turn and a half or less according to the exigencies of the case to be treated; the arms of the wire are left long, one is adapted to the side of the tooth to be moved (Fig. V.), and the other bent and flattened for insertion into the wax. The single coil formed by this wire should be large enough to admit the blade of a flat pliers to open the ring. Pressure is obtained and maintained by opening the ring gradually.

The drawing shows the position in which the wire is most accessible, and that in which most work can be obtained from its use. It is always best in my opinion to erect a small platform of vulcanite underneath the coil. The same precaution in flasking is necessary as that described for the flasking of the Coffin spring, the coil must be covered over with plaster and the surface made as smooth as possible.

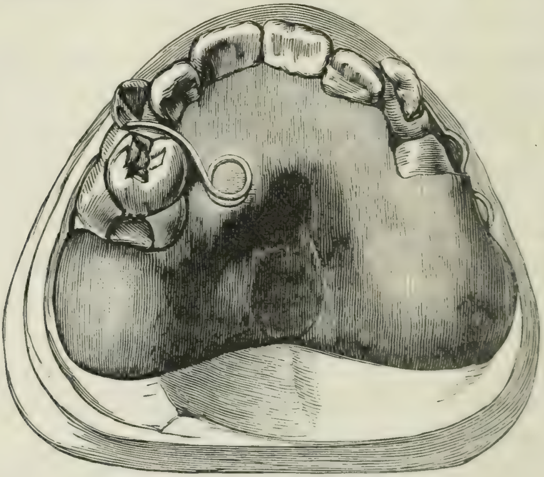

Fig. IV.

The same spring can often be applied with advantage to front teeth, though its utility in this position is variable, as the tendency of the wire is to slip off such teeth as laterals and centrals. Still, in a certain number of cases where the teeth are large and the cingula prominent, the spring may be found expedient.

It is a rule which deserves treasuring—that regulating appliances should perform their allotted tasks without dependence on the immediate help of the patient. The superiority of the wire over hickory pegs, on this account, is great, but not so over compressed wood wedges. In many cases treated with the spring, it is unnecessary to cover back teeth, this advantage is one which should be grasped whenever otherwise admissible.

This form of spring, in conjunction with a long wire running along the labial surfaces of the teeth has frequently been used, and is in favour with some gentlemen of great experience, for twisting laterals or centrals. I have found very little satisfaction in its application ; there are methods which are not within the scope of this paper that afford more certain and better results.

Steel wire must always be coated with some metal which is not so readily acted upon by oxygen, sulphur, and moisture. Tinning has been long in favour, and it affords satisfaction. The commonest plan for tinning is that of dipping the wire into molten tin, or to melt tin on a spatula, lightly heat the wire and rub the tin on to it.

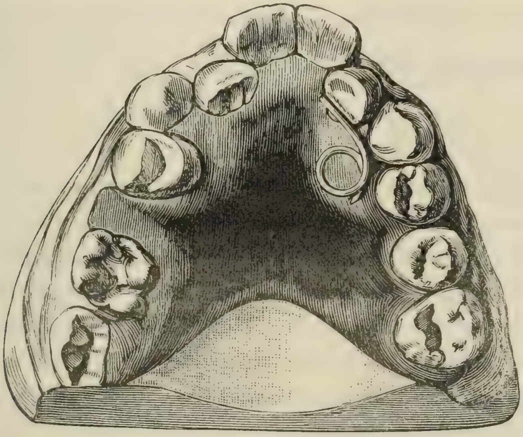

Fig. V.

When curator of the mechanical laboratory at the London Dental Hospital, I had a large coil of wire tin-plated by an expert in electro-plating, and it was found that this wire answered the purpose very well, it had the disadvantage of being coated before the manipulation required for adaptation was performed, and obviously this was a drawback ; with care, however, it was found that it answered well.

I was anxious also to try how a deposit of gold on the wire would answer in the mouth. Before depositing gold, a coating of copper is usually given to steel wire, but as there is an objection to copper in the mouth, gold was deposited directly on to the wire which I used. The result was satisfactory in those few cases where it was used, but I have not seen a sufficient number of cases to justify an absolute recommendation. If a gold-plated wire be used at all, it should be covered over in some way (cotton was twisted round those used under my supervision, a very tedious process), or the brush will take off all the gold in polishing.

One piece of this wire was used to run along the labial surfaces of the front teeth in a retention plate, it was retained in the mouth for some months and gave absolute satisfaction ; for such a position then it can be recommended.

If an opportunity of trying this wire on a large scale presents itself again, it seems to me justifiable to test whether copper, covered as it would be for the most part at any rate by gold, as a coating of the wire would be an improvement.

DIAGNOSIS OF SWELLINGS OF THE JAWS.

By Edouard J. Blain.*

Mr. President and Gentlemen,

The subject of the paper which I purpose to read to-night, is one that needs no apology, as it deals with matters which will occur daily in our practices in future life, the correct diagnosis and treatment of which may greatly affect the success we shall attain.

Swellings of the jaws may be divided into two great classes, simple and malignant. Under the head of simple we may have tumours, diseases of the antrum and inflammation.

Under the head of malignant we have sarcoma and epithelioma.

Inflammation of alveolar periosteum may be divided into general and local.

General inflammation may arise from inhalation of phosphorous fumes, scrofula, rheumatism, syphilis, ptyalism, scurvy.

Inflammation from inhalation of *phosphorous fumes* generally develops into necrosis.

Scrofulous inflammation.—Pain is slight but swelling considerable.

Inflammation resulting from rheumatism or syphilis.—The symptoms are intense toothache which is affected by the weather, not much tendency to swelling, or to suppuration.

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* A Paper read before the Students' Society, Dental Hospital of London.

Ptyalism.—Teeth become tender, elongated, loose, and the breath tainted with the mercurial fœtor. If the exhibition of the drug be continued large sloughs will be formed upon the inflamed parts, and portions of the alveoli with the contained teeth will be lost. If on the contrary the mercury be discontinued when the inflammatory action is, although well marked, moderate in amount, the induced disease will generally subside.

Scurvy.—The disease, although once very common, is but rarely seen at the present time. The gums are greatly affected, the appearance of the mouth is very peculiar, as the lips and tongue are pallid, and contrast strongly with the blotchy, dusky, purple gums running up between and even over the teeth, and bleeding at the slightest touch. In severe cases the blood oozes from the gums, and these may slough and lay bare the necks of the teeth and alveoli. The teeth become rapidly loose and fall out.

Stomatitis is a disease common among children. The mucous follicles become inflamed in the region of the sulcus between the lips and gums, the frænum of lip. and beneath the tongue. Treatment consists in the use of astringent mouth washes ; borax and honey is a good remedy. If the ulcers are painful they may be touched with nitrate of silver. There is another form of stomatitis more common in children than in adults, and in the lower than in the upper jaw It is generally found in the region of the canine tooth, extends forwards rather than backwards. The disease is very painful, the breath becomes very foul, and if neglected easily runs on to sloughing and necrosis. Treatment consists in building up the general health by tonics, and chlorate of potash given internally, the dose being 1 grain for each year of child up to 8 years.

Actinomycosis is a rare parasitic disease. It is characterised by the formation of hard swellings which eventually ulcerate on the surface and discharge a thick creamy substance, which on examination under the microscope appears to be largely made up of the parasite the actinomyces.

Treatment of General Inflammation.—The state of the body should be first attended to—a generous diet with quinine will be found advantageous. During the stage of congestion, powdered tannin should be rubbed into the gums at frequent intervals.

If the secretions of the mouth are offensive, a wash of 2 to 6 grains of zinc chloride to an ounce of water will afford relief if used at intervals of four to six hours. A state of inflammation having been established from a general cause, is often kept up by two or three defective teeth, these should be at once removed.

Active or Acute Inflammation.—Acute inflammation of the dental periosteum, when confined to the alveoli of one or two teeth, usually arises in connection with, and as a direct sequence of pre-existing disease in the involved tooth or teeth. I will not trouble you with the symptoms, as they are too well-known to bear a repetition here. If unarrested the periosteum becomes detached from the cementum. The separation usually commences at and extends from the apical foramen of the root of the tooth. Into the interval thus formed, pus is poured from the separated surface of the periosteum. The fang now loses its vitality, and is bathed in pus, and space being gained in the alveolus for the dilatation of the abscess at the expense of the bone. A process is now set up for liberating the pus, which either finds its way by the side of the socket and passes out at the edge of the gum, or a perforation is made in the wall of the alveolus, through which the contents of the abscess pass into the gum. If the disease be allowed to run its course, the contents of the abscess will soon find their way to the surface and escape. Sometimes the pus, instead of escaping into the mouth, may find its way into the surface of the face, the antrum, or even the chin. Cases are known where the pus gravitated down to the neck, and finally two sinuses opening below the clavicle were established.

Abscesses connected with upper incisor teeth may point within the nostrils, and the patient's attention may have been directed to the discharge from the nose. The case may without care be erroneously treated as one of ozœna. It is usual for abscesses connected with the laterals to form within the mouth in the region of the palate, and those connected with the centrals and canines to form on the outer wall of the alveolus.

Abscesses resulting from difficult eruption of wisdom teeth, occasionally pass forwards within the mouth, and open near the canines or bicuspids. They may also pass back and burst in the fauces.

Trismus is often brought on by an abscess, which can be generally relieved by the extraction of the offending tooth ; extreme alveolar abscess may cause necrosis.

Treatment.—To whatever stage the inflammation has come, the pulp canals should be opened up, cleared out, and rendered antiseptic. In doing this, care should be taken that if an abscess has not yet been formed, septic matter be not forced through the foramen. The knife may be used with advantage in opening up an abscess. It is well to paint the gums of the affected tooth with a *strong* solution of aconite and iodine. When the tooth has been rendered quite comfortable, the filling may be proceeded with in the usual way. In the event of the tooth giving trouble, so that a permanent or even gutta percha filling may not be introduced, rhizodontrophy may be performed. In some cases the inflammation has gone so far, and the tooth so badly decayed, that extraction is necessary, but in cases of this sort the discretion of the operator should be used.

There is a peculiar kind of inflammation which alone affects the lower jaw. The inferior maxilla differs from the superior in consisting of two plates of compact tissue, of which the outer is the thinner, separated by cancellous bone. When inflammation is excited from the irritation of an unsound tooth, it rapidly spreads up the jaw, leading into an effusion into the cancellous structure which distends it and forces out the external plate of bone. This effusion can be made to exude by pressure on the jaw, either by the side of or through the hollow tooth which was the original cause of the mischief. If the source of irritation be allowed to remain, plastic effusion takes place, leading to the formation of a distinct tumour usually in the neighbourhood of the offending tooth. This is slowly absorbed on early removal of the tooth, but if the irritation be allowed to continue, the effusion will be organised into fibrous tissue and finally formed into a fibrous tumour.

Chronic Inflammation.—At the outset the margin of the gum becomes thickened and readily bleeds. If allowed to run its course uninterruptedly, the inflammation passes from the tissues about the neck of the tooth towards those which surround the root ; the tooth becomes loose, the edge of the alveolus disappears and the gum sinks down by slow degrees. The disease is attended with but little pain, excepting such as is produced by force applied to the loosened teeth. Suppuration may occur around the roots of several healthy teeth in strumous or syphilitic persons ; this is especially apt to occur about the incisors. The causes which excite chronic inflammation of the dental periosteum are :—the collection of tartar ; a ligature around the neck of a tooth ; or pressure in an oblique direction by an antagonistic tooth.

Treatment.—Depends upon the nature of the exciting cause. If the local cause be detected, its removal must be the first step in the treatment ; afterwards astringents, such as tannin, applied to the gums will assist in restoring the gums to a more healthy condition.

Unsuccessful extraction of a tooth may cause suppurative periostitis which spreads to the body of the jaw. A case is recorded in which this happened ; necrosis supervened and a large piece of necrosed bone came away. A patient came some three months ago to this Hospital with a large hard swelling on the left side of the lower jaw, from which there was a discharge. It appears that about eighteen months previously the second molar was broken in an attempt to extract it. The patient was advised not have the stumps removed, as they were very firmly impacted. The result was that the swelling was formed of which he complained. The stumps were successfully extracted and the swelling has since disappeared. Unfortunately an ugly scar remains.

Tumours.—(Simple.) Hypertrophy of the gums is by no means a common affection ; it usually commences in childhood and is slow and painless in its progress. The growth is sometimes confined to the gums, but usually the alveolus participates in the hypertrophy. The tumour generally consists of a pink mass, lobed, with a dense insensitive skin-like surface in which the teeth are sometimes completely buried.

Treatment consists in nothing less than the complete removal of the affected alveolus ; as the removal of the gum only does not seem to be of much use.

Polypus of the gum is the name given to a simple hypertrophy of the portion of the gum between two teeth, not infrequently in which there has been interstitial decay, which has advanced as far as the cervix, leaving a sharp edge to the cavity ; which, acting as an irritant to the adjacent gum, causes it to become chronically inflamed and to increase in size. At first it overlaps the edge, then finally it fills the cavity. It is apt to be mistaken for polypus of the pulp, but if care be taken it may be isolated from the tooth and be shown to spring from a pedicle *between* and not within either of the two teeth.

Treatment.—If it is desired to retain the tooth, the growth may be removed by escharotics and the tooth filled. Care should be taken to have the cervical edges of the filling absolutely smooth or the growth is liable to recur. In some cases it is necessary to remove the tooth.

Epulis.—Mr. Tomes gives three varieties : fibrous, elastic-fibrous in structure, and myeloid. It is a slow growing tumour, usually starting from the edge of the periosteum between two teeth. It is hard and smooth on the surface, and has little or no tendency to hæmorrhage except when bitten upon by the opposing teeth. The tumour is more common in women than in men, in the upper jaw than in the lower. It increases in size until bitten upon in mastication, which it sometimes impedes. A case is recorded by Mr. Erichsen in which a fibrous epulis of seven years growth hung down to the level of the jaw. Also Mr. Liston's celebrated patient, who had a fibrous epulis of formidable size, which gave rise to great suffering and inconvenience.

Treatment.—Removal by the knife and the underlying bone *freely* scraped away. Sometimes it is necessary to remove the tooth or teeth from which it springs.

Fibrous Tumour, *Fibroma or Fibrous Odontome* is the commonest form of growth in the lower jaw and may take either of two forms, endosteal or periosteal The tumour generally arises from some inflammatory deposit due to irritation of decayed teeth. It is most generally developed in the side of the lower jaw, where the space between the plates is wider than elsewhere. A case is cited in which it occupied the dental canal and had the dental nerve passing through it. By the slow growth of the tumour the jaw is expanded, the outer plate yielding more readily than the inner. Occasionally the fibrous tumour invades the symphysis, and, owing to the restricted amount of expansion the bone is capable of, absorption of the anterior surface takes place and the tumour projects, involving the adjacent bone. The periosteal variety of fibrous tumour is not distinguishable from epulis except by its size and hardness. In some cases the growth is closely connected with the periosteum and may completely surround the jaw.

Treatment.—Complete removal with the gouge or bone-forceps alone suffices. Often part of the jaw has to be taken away to gain the desired object. Though slow of growth under ordinary circumstances, a fibrous tumour of the jaw, if irritated by the application of useless remedies, with the view of producing absorption of the growth, may assume enormous proportions and destroy life, owing to the irritation and continuous discharge to which it gives rise.

Enchondroma is not common, and, like fibroma, has two forms, endosteal and periosteal.

The endosteal variety is slow of growth, and occupies the space between the plates of bone and often imbedding the teeth.

The disease is generally the result of irritation caused by a decayed tooth. A cartilagenous deposit takes place, which is followed by ossific effusion.

Treatment:—The source of irritation should be first sought for, and when found removed. Thus sometimes although the disease has advanced to a considerable extent a cure can be effected. Should this be insufficient it may be necessary to remove the external shell with a saw, and the cartilage it contains dislodged with an elevator.

Periosteal variety springs from the membrane covering any portion of the bone, but most frequently affects the body.

It is a rapidly growing tumour, sometimes attains enormous proportions, and may cause death by interfering with respiration or deglutition. A case is recorded in which a woman presented herself with a large tumour bulging from the jaw and pushing into the mouth. It was removed, and at the same time five teeth were extracted which appeared to have been displaced by it. The growth had many recurrences, and was removed no less than ten times in eighteen years. The patient recovered rapidly after each operation and was still living in 1884. The tumour consisted of large isolated masses of cartilage, varying in size from a hazel nut to a closed fist, packed tightly together and each portion enclosed in a distinct capsule.

The masses of cartilage were hard enough to push in their growth all important structures before them.

Dentigerous Cysts or Compound Follicular Odontomes are swellings which occur within the jaw-bones, in connection with developing or retained teeth. The cyst arises from excessive secretion of a fluid, normally present in a minute quantity between the enamel and inner wall of the tooth follicle.

The diagnosis of a dentigerous cyst from other cysts is exceedingly difficult until they are opened. A careful examination may reveal the absence of a permanent tooth ; this might point out the possible existence of a dentigerous cyst. If the cyst is sufficiently expanded there is yielding under the finger with a parchment-like crackle. If this be absent a puncture should be made, and one finds a hollow cavity lined with soft tissue, in which one or several teeth may be present.

Treatment:—A free incision, which should always be made by dividing the mucous membrane *within* the mouth and without incising the cheek, so that as little after deformity as possible may be produced, and subsequent extraction of contained tooth or teeth.

In some cases, simple puncture will not suffice, and the removal of the front wall of the cyst and the filling of the cavity with lint so as to induce granulation and gradual obliteration becomes necessary.

Cysts connected with fully developed teeth are often found on the extraction of a tooth ; giving rise to symptoms demanding surgical interference, though sometimes cause pain from pressure on dental nerves.

Occasionally they grow to a large size, in which case they produce absorption of the containing alveolus, and give rise to prominent swelling. The treatment of these larger cysts is often extraction of a tooth, is to freely cut away the outer wall of the cyst with scissors, so that the cavity may granulate up. If an incision *only* is made, the edges are apt to fall together and unite with a reproduction of the fluid, unless a drainage tube be inserted, which can be attached by a thread to the neighbouring teeth.

Multilocular cystic tumours are produced by an ingrowth of epithelium of the gum or follow some injury, irritation by decayed teeth or long continued inflammation which has induced an increased supply of blood to the parts. The tumour is slow of growth, and if completely removed, rarely recurs.

Treatment consists in completely removing growth, with surrounding parts, to effect which, part of the jaw has often to be sacrificed.

Suppuration of the Antrum is a condition which sometimes causes great swelling on the affected side, often with displacement of the eyeball and loss of sight. The symptoms are, first, inflammation of the lining membrane of the antrum, dull, deep seated pain shooting up to the face and forehead, and tenderness of the cheek. Occasionally the pain is most acute, and of a sharp neuralgic character. Matter is formed, which finds its way into the nostril when the patient is lying on the sound side, either through the normal aperture, or through an opening caused by absorption. The discharge finds its way into the throat, and the patient complains of a disagreeable taste in the mouth, and a tendency to nausea on awakening in the morning. The swallowing of this purulent matter during sleep damages the digestive organs, the patient is always ailing, cannot take food in the morning, and may be reduced to a state of prostration. An offensive odour is sometimes perceptible to the patient, though not to those around him. A sudden discharge of matter from the nostril when blowing the nose may relieve all symptoms for the moment.

Causes.—Ordinarily it is the result of inflammation spreading from the teeth to the lining membrane of the cavity. Particles of food or foreign bodies entering the antrum after the extraction of a tooth or other openings having been made. The result of a blow, and commonly a stump slipping into the antrum in an endeavour to extract it.

Treatment.—Extraction of all decayed teeth, stumps, or even tender teeth in the affected jaw, as the case may be. If the extraction of a tooth is followed by a flow of pus, the socket should be probed so as to evacuate the matter. If the alveolus be perforated, which may be performed with a large spear-headed drill on an ordinary dental engine, or by means of a gouge fitted with a guard; care should be taken so as not to damage the orbital plate, as exfoliation of the plate might ensue. After emptying the antrum it is important that the cavity should be thoroughly cleansed by a forcible injection of warm water until it runs freely from the nostril; then an astringent lotion might be injected, such as permanganate of potash or zinc sulphate. Care should be taken that no particles of food may reach the antrum through the opening, and to prevent this a metal plate may be fitted, having a small tube or number of springs attached to it, going into the aperture, which can be plugged at pleasure. This also serves as a pipe for injection.

If the disease be not treated, the results are very serious. A case is recorded in which neglected suppuration of antrum was followed by death in 16 days, from suppuration within the cranium followed by epileptic convulsions.

Cysts in the Antrum are occasionally found; sometimes they appear singly, or numerous, and of variable sizes.

Treatment.—The bony wall being most commonly absorbed, it is only necessary to incise the distended membrane and evacuate the fluid. The finger can then be passed into the cyst, and can examine its interior, searching for any growth or tooth that may be lodged therein which ought to be removed. The use of a simple stimulating lotion with a syringe will generally effect a cure. In some cases the number of cysts in the antrum is so great, that removal of the upper jaw alone suffices.

We will now pass on to malignant growths.

Epithelioma of the Gums is a condition of ragged ulceration of the gums dependent upon a tooth or the long continued irritation, as from the wearing of an artificial denture. The growth rapidly spreads into the adjacent alveolus, cheek, and tongue.

Treatment.—Rapid prompt treatment cannot be too strongly insisted upon. In a recent case of ulceration of the gums *simple* treatment may be tried, which consists in thoroughly destroying the ulcer. The frequent application of solid silver nitrate, nitric acid, or even the actual cautery, which last is the best, may be sufficient to produce a healthy cicatrization, but even then the part should be carefully watched in case of further development of the disease. If the ulcer fails to heal readily by the above-mentioned treatment, surgical treatment should be at once adopted, which consists in cutting away the surrounding alveolus with a saw or bone forceps. In some cases it is necessary to cut away the whole thickness of bone.

Epithelioma of the Antrum is a very insidious disease which gives rise to the formation of no tumour on the face, but slowly destroys the antrum and spreads in all directions. The disease may be sometimes recognised by the attachment of a fungus to the roots of a tooth seen in its extraction. On the slightest suspicion the disease should be at once treated as it spreads so rapidly.

Treatment.—Complete removal of the upper jaw only is sufficient, as the removal by escharotics is not generally successful. The disease is generally fatal if the patient be advanced in life. Death being due in most cases to shock or exhaustion.

I shall not be able to touch upon any other forms of swellings of the jaws, as I have already trespassed too long upon your valuable time. In conclusion, gentlemen, I have but to thank you for having listened to a paper which has done but scant justice to so important a subject.

AN EXPERIENCE WITH COCAINE.

By W. W. Coon, D.D.S.

A case has lately come to my attention that seems like "An Experience with Cocaine," as related in the Dental Record, February, 1891. The patient, a young lady in good health, related the peculiarity to me, and after reading in the "Dental Record" the article above referred to, she consented to write a concise account of it for publication, which is appended. "Having occasion to have a tooth extracted, I employed a dentist who had advertised to remove teeth without pain. Some substance, the name and properties of which I did not know, save that it was to paralyze for the time being the gum, was injected in the region of the tooth, when I became almost immediately aware that the greater portion of the roof of the mouth was rapidly swelling. This increased until the mouth was literally full, and the sensation was much as if it had been stuffed with cotton. The swelling decreased considerably within twenty-four hours, but did not disappear entirely until several days later. At no time was there any soreness or inflammation connected with it."

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Ordinary Monthly Meeting of the above Society was held on the 4th May. The President, Mr. J. S. Hutchinson, M.R.C.S., L.D.S.Eng., in the chair. The minutes of the previous meeting were read and confirmed.

Mr. C. A. Clark (Forest Hill), Mr. Maudsley Howkins (Hull), and Mr. S. A. Coxon (Wisbech), signed the obligation book, and were formally admitted members of the Society.

Mr. H. B. Gill, L.D.S.Eng. (Upper Norwood), was balloted for and duly elected.

Mr. J. W. Seville, L.D.S.Eng. (Exeter), and Mr. Carl Schelling, L.D.S.Eng., were nominated for membership.

Mr. JAS. STOCKEN, being called upon by the President, narrated the particulars of some cases of the absorption of fangs of permanent teeth, and showed specimens. One, a lower wisdom tooth from a gentleman aged about 50, who complained of this tooth being somewhat loose. After examining it, Mr. Stocken came to the conclusion that the patient was suffering from Riggs' disease; there being no opposing tooth, he extracted it. To his astonishment its removal did not require any effort; complete absorption of the fangs had taken place. On careful examination there seemed something like a nerve fibre on the anterior fang, coming out of the nerve canal. All the other teeth were in a healthy condition, there was no overcrowding, and apparently no cause for the absorption. Another case was that of a lower molar, the absorption having been induced, in Mr. Stocken's opinion, by plugging with amalgam, which had perforated the apex of the fang; there was a great deal of absorption all round the fang. Mr. Stocken also exhibited a deciduous tooth of a horse, in which absorption was supposed to have gone on for three years. The horse would not take its food, and the reason could not be understood, until one day something fell from its mouth to the ground, when it was discovered to be the deciduous tooth, which, as there was no similar specimen in the museum, Mr. Stocken had much pleasure in offering for acceptance.

The PRESIDENT gladly accepted the offer, and remarked upon the interest of Mr. Stocken's communication.

Mr. J. BLAND SUTTON described and exhibited a very large odontome from a horse, weighing over 70 ounces, and being, so far as Mr. Sutton was aware, the largest from a horse on record. It was of peculiar shape, its general contour recalling in a striking manner the brain of a horse. The specimen had been for a long time in the museum of the Royal Veterinary College, London. In section it had a laminated appearance, and microscopically differed from any kind of hard tumour he had previously examined. Sections of the tumour had been prepared for Mr. Sutton by Mr. Charters White, with his accustomed skill, and he had succeeded in injecting the vascular canals with a coloured fluid, by which method he had demonstrated what would otherwise scarcely have been suspected, viz., that this extremely dense tumour was very vascular. Its chief structural peculiarity was the presence of large richly branched lacunæ. Mr. Sutton had been unable to cut it up for microscopical purposes so freely as he could have wished, nevertheless he had seen sufficient to justify him in expressing the opinion that it was an enormous cementoma resulting from the ossification of an enormously thickened dental follicle.

The PRESIDENT asked if there was any sign whatever of a tooth in relation to this odontome?

Mr. W. A. MAGGS wished to know Mr. Sutton's reasons for describing the tumour as an odontome, rather than an ivory exostosis.

Mr. J. BLAND SUTTON replied, as to whether there were any elementary teeth, there was just a possibility that the appearance at one spot might be a patch of dentine, otherwise there was no indication of anything of the kind. With regard to the question put by Mr. Maggs, he thought it would be entirely retrograde to call the tumour an ivory exostosis, its character and structure clearly indicated it to be an odontome.

Mr. MORTON SMALE read notes of a case of closure of the jaw resulting from a fall, and of which the following are the particulars:—A patient, aged twenty-seven, came under his care in 1887, anxious that some badly decayed incisors might be extracted and replaced by artificial substitutes. On examination, the mouth was found to be firmly closed, and it was impossible to get a model of the mouth even had it been possible to remove the offending teeth.

The patient gave the following history:—When three and half years old she fell from a window fourteen feet from the ground upon a brick coping. She was able to get up and run round to the front door of the house. No bruise or wound was to be found, two teeth were knocked, and there was slight bleeding from the ear. The doctor who was called in attendance diagnosed it as fracture of the base of the skull. She was kept in bed for a week, and then allowed to run about as usual. The mother noticed she had difficulty in eating, and on consulting the doctor with regard to this ten months subsequent to the accident, he advised a consultation with an eminent surgeon. After the interview the mother was advised to let things alone until the teeth became troublesome, and to persevere with graduated wedges. A few years later she was taken to see a well-known dentist who advised Indian rubber wedges instead of the wooden ones. While in 1873 another dentist was consulted who found it necessary to remove some teeth, and after wedging perseveringly for some weeks chloroform was administered, and some teeth extracted, but no good resulted so far as movement of the jaw was concerned. From this time the patient appears to have ceased all efforts, and the jaw became fixed, it being only possible for food to be taken through an aperture produced by decayed teeth.

In reading this account by the patient two or three things were worthy of notice.

1. It seemed highly improbable that there was a fracture of the base of the skull at the time of the accident, or the patient would hardly have been running about in this world at any rate at the end of a week. The bleeding might be due to injury of the membrana tympani, or to injury to the glenoid cavity or some surrounding tissues.

2. When it was found possible to obtain movement and open the jaw by gradual wedging, would it not have been advisable in a young healthy person to have ruptured the adhesions forcibly, and then used the wedges to keep them from becoming again fixed? Later when ankylosis was firmly established such a course was clearly impossible.

When the patient presented herself to Mr. Smale in 1887, she certainly was in a sad plight. The mouth could not be opened at all. It was impossible for her to go into society, for she could neither eat nor talk like an ordinary individual, and being of a highly sensitive organization felt the deformity very much. Mr. Smale advised therefore before anything else was done that she should see Mr. Christopher Heath with the view of his forming a false joint upon the right hand side, it being possible to feel slight lateral movement in the left articulation. Mr. Heath agreed to this, and the operation was performed, which is described by Mr. Heath in his "Lectures on Injuries to the Jaws."

The immediate result of this was successful, the patient was able at once to open her mouth until two fingers could be easily got between the front teeth. The teeth were extracted, a denture made, and a new era of life opened to the patient.

This case had not been reported before, for the reason that it seemed desirable that some years should elapse to see that the result had been permanently successful. This had not altogether been the case, for last week when the patient presented herself she could not open her mouth more than a $\frac{1}{4}$ of an inch instead of $1\frac{1}{4}$ inch, which she could do after the operation, and she was now using a screw gag every day to stretch the adhesions that had formed, but it seemed highly probable that it might be necessary to place the patient under an anæsthetic and rupture the adhesions forcibly. In cases of this sort it was of the utmost importance that forcible movement should be persevered with after the operation, great care being taken by the patient that the mouth be not allowed to become fixed again.

Mr. SMALE felt an apology was due for narrating so very ordinary a case, which he should not have done but for the fact that in spite of this patient having seen three dentists and two surgeons, she had lived from three and a half to thirty-two without this operation having been suggested to either her parents or herself, and it seemed possibly useful that the attention of members might be called to a case of this sort, which in the ordinary way is only reported to the Medical Societies. Dr. Dudley Buxton, who he saw was present, might perhaps mention some additional facts about this case, as he assisted at the operation and had had experience of other similar cases.

The PRESIDENT said that they were indebted to Mr. Smale for bringing forward the communication and they would be glad to hear Dr. Dudley Buxton upon the subject.

Dr. DUDLEY BUXTON said that he remembered Mr. Smale's case, and that the division of the jaw proved a tough job, and he also remembered the case read from Mr. Heath's lectures. In that case both he and Mr. Heath were anxious that it should be successful, as both from Mr. Heath's point of view and his own it was a case of no ordinary difficulty. Mr. Smale had spoken of it as an ordinary case, but Dr. Buxton was not of that opinion. Esmarch of Kiel, Rizzoli of Bologna, Spanton, and other surgeons, had described such cases and operations for their relief, but Dr. Buxton thought that in the literature of the dental profession the matter had been passed over with little or no notice. He might say that in the case of the first patient the operation consisted in introducing a fine saw between the masseter and the bone, dividing bone at the level of the last molar, and then by forcibly moving the jaw apart by means of a powerful gag (Heister's) the bone was completely ruptured, and the tissue about the bone also turned and stretched. This had been done on two occasions. On the second it was found necessary to pull the jaws more widely apart. On the first Mr. Heath resisted the temptation, deeming it prudent to proceed with caution ; on the second considerably more force was employed, and after the bone was separated by the saw, the jaws were moved apart forcibly by means of Heister's gag. In the first operation it was difficult to get any *point d'appui* from which to get any pressure, and some of the teeth were forced out in opening the jaws. There did not seem to be any other points to dilate upon, but Dr. Buxton could only say that the appearance of the patient before and after the operation spoke most eloquently as to the value of the operation, and he agreed with Mr. Smale that the deepest sympathy could not but be felt for any human being who for so many years had stood in need of such surgical aid as this case required, and that certainly one would be inclined to give the operation a trial.

Mr. Newland-Pedley said the case was very interesting, but one could not help thinking that operations for fixed joint were not exceedingly rare. Esmarch's they were familiar with, but, as in this case, recurrence after the operation frequently took place. Mr. Newland-Pedley remembered they had a case at Guy's in which a boy had ankylosis on both sides of the jaw. In that case a surgical colleague performed excision of the condyles. He believed there were several similar instances of both condyles being removed with permanently beneficial result. Such an operation was not likely to produce deformity.

Mr. Hern wished to ask Mr. Smale whether the immobility was due to the renewing or cicatrisation of the soft tissues.

The President said these cases did not seem so common as Mr. Smale would have them believe or they might have expected to hear the personal recollections of similar cases from some other members.

Mr. Morton Smale remarked that Dr. Buxton had said that Mr. Heath found it rather hard work dividing the jaw. This would be accounted for to some extent from the fact that Mr. Heath had also sawn through a tooth (exhibited). Mr. Smale wished to say that the patient was distinctly benefited and was quite of opinion that the right thing was done and was very much obliged to Mr. Heath. With regard to the cases Mr. Newland-Pedley had referred to, one had read of them but one never heard of the subsequent history. It was unfortunately too common to make haste to announce the success of an operation before sufficient time had elapsed to test the permanency of the relief. Mr. Smale would like to know whether fibrous adhesion did not afterwards take place. It was for this reason that Mr. Smale had delayed the publication of the case he had brought before them. In reply to Mr. Hern, Mr. Smale thought that fibrous tissue was formed between the sawn ends of the bone, but he did not think ossification had taken place. They were able to stretch the opening, and he believed that Mr. Heath still hoped that by means of a screw gag the patient might be able to open her mouth very considerably at the end of a few weeks, but Mr. Smale was not so sanguine.

Mr. David Hepburn narrated a case of attrition in the first dentition, it was one of "attrition" of the deciduous teeth, associated with retarded eruption of the permanent teeth. The case was unique as far as his personal experience went. The child, a boy nearly eight years old, had not shed any of the temporary teeth and there was no sign of the six-year-old molars or other teeth of the permanent series. The temporary teeth, as shown by the model (especially the incisors and canines), were worn down almost to the level of the gum, so much so indeed that the pink pulps might be distinctly seen through a delicate but highly polished window of dentine. The abrasion of the teeth was most marked in the upper jaw. The child, a hearty intelligent little fellow, had been observed to grind the teeth together at night. Mr. Hepburn would say that there was some pressure of the frontal bones, but, in this particular case, he was unable to pursue enquiries as to any latent defects in the child's constitution.

Mr. F. J. Bennett thought it a little remarkable that it was entirely the front part of the mouth that was affected. The first and second molars did not appear to be worn down to any extent: that might be accounted for from the circumstance that the incisors began to be worn down before the eruption of the molars. At any rate, it seemed remarkable that it should only have occurred in the front of the mouth. He had seen the first and second temporary molars worn down in that way in children and also the incisors, but in the cases he had seen the wearing had always been distributed uniformly.

Mr. C. V. Cotterell brought before the Society a convertor, the idea of Mr. A. B. Woakes, of Harley Street for reducing the electric current as supplied from the mains from 50 or 100 volts to three volts, and from ten ampères to only half an ampère, thus obviating the necessity for primary or secondary batteries. It was a reversed induction coil. The primary coil, with fine wire and many turns, had a resistance of about 50 ohms, and allowed as much electricity to pass as 3-16 c.p. lamps would require, which was two ampères. The secondary coil contained thicker wire and only a few turns; it had a very much lower electro-motive force (only sixteen volts) but a greater number of ampères, viz., ten. Mr. Cotterell said that most cautery burners, lamps, motors, mallets, &c., required less than this, and the current strength, as well as the number of volts, could be conveniently regulated by moving the primary coil. When drawn out the current of the secondary coil had only about three volts and half an ampère; by pushing it home this gets gradually increased to sixteen volts and ten ampères. The current could be used for two purposes at the same time, viz., light and cautery or light and motor, as there were two sets of terminals. In order to prevent the electricity being wasted there is a lamp which gets incandescent immediately the apparatus is connected with the main, and ceases to give light only after it has been disconnected. The convertor could also be employed for the faradic current and so used in tooth extraction.

Mr. C. S. TOMES asked if he correctly understood Mr. Cotterell to say that the convertor enabled him to utilize the supply from the mains to drive the motor and dental engine, and that the alternating current was transmuted into a continuous current?

Mr. COTTERELL replied that he had not a motor, but Mr. Schall had, and he (Mr. Cotterell) understood that the motor was worked satisfactorily from the mains by means of this convertor. He believed the alternating was changed to a continuous current.

Mr. C. S. TOMES, notwithstanding Mr. Cotterell's reply, felt somewhat sceptical as to whether the convertor would accomplish all that Mr. Cotterell gave it credit for. If it would, it was a matter for great satisfaction to the profession; it was an end Mr. Tomes had long desired to obtain, and one for which he had spent no little time, but in vain.

The PRESIDENT then called upon Mr. D E. N. CAUSH for his paper on "Exostosis"

Mr. Caush having expressed his acknowledgments to Mr. T. Charters White for the method of preparing hard sections by means of ground glass and pumice powder, said that the plan he adopted was to take a tooth and cut as many sections as it was possible to obtain, commencing at the apex of the root and leaving off at the point of the tooth where the enamel joins the cemental tissue ; thus a series of sections were cut for each tooth. These were numbered as cut off, and mounted in their consecutive order, enabling any portion of the root to be examined, and any modification of the tissue traced under the microscope. One of the first things noticed in the course of his investigations was the absence of the original layer of cemental tissue in exostosed teeth, this was almost invariably absent at or near the apex of the roots. The granular layer—*i.e.*, the layer of somewhat porous tissue existing between the dentine and cementum at the point of the union of the two tissues—was also greatly altered in many cases, a mixture of the two tissues often taking its place, and showing in the dry sections large irregular spaces, these spaces having been probably filled with semi-fluid matter before the teeth were extracted. Nearer the crown this absorption was much less marked, though here and there the dentine was scooped out at different points of the tooth, and afterwards filled with cemental tissue, yet the nearer the crown the more perfect the granular layer ; but at those points where absorption had taken place the line of demarcation was much more definite than at the apex. These changes were probably due to the fact that in all cases where new tissue was being formed, one of the earliest stages was a slight increase of the blood supply, at which point the cells became more active, and a larger number of cells were probably developed similar in character to those known as giant cells or osteoclasts, their duty being that of absorption. The cells either commence to absorb the alveolus, or the cemental layer surrounding the dentine. Mr. Caush thought when the irritation was slight its first action was upon the cemental tissue, and these cells were developed in the alveolo-dental membrane on that surface which was attached to the layer of cemental tissue. After having absorbed the original layer of cementum, the cells pass on to the granular layer, and from that to the dense or more calcified tissue of the dentine ; here as a rule the absorption ceased, but if the dentine at this point was imperfectly calcified, absorption went on until the dense portion of the dentine was reached, producing an irregular margin. A change then takes place in the cells; they become true cementoblasts, which calcify after others are developed, and a layer of new tissue is formed close to the dentine, partially filling up the irregular spaces, and in places becoming entangled among the new tissue, are to be found a number of new cells corresponding to the giant cells already alluded to. Sections near the crown showed semi-lunar cavities filled with cemental tissue; the absorption here, as a rule, was more restricted in area, but greater in depth than at the apex. It appeared in many instances that the absorption only took place after one or more layers of cemental tissue had been added to the root of the tooth. After prolonged activity of the cementoblast, and a layer of calcified cementum has shown itself about the root, a period of rest sets in, and gives rise to the incremental lines of Salter. These lines afford a clue as to whether the tissue has been slowly or rapidly deposited, for in the latter case the lines being few, the lacunæ are large and membrous, with numerous canaliculi radiating from them, and *vice versâ* when the deposits are slow. These conditions Mr. Caush thought were produced by continuous, though slight, irritation. He believed that after one, two or more layers of cemental tissue had been deposited there were definite lines of reabsorption, this probably taking place after a time of rest, and on renewal of activity. At a later period a fresh layer of tissue was re-deposited to fill up the cavities by absorption This absorption might be produced by increased activity of the cells consequent upon a larger blood supply, or by periostitis, or even the more acute alveolar abscess. In cases of chronic abscess the dentine as well as the cementum might be absorbed, and the depressions might pass almost into the pulp chamber, while even these would sometimes be found lined with fresh tissue. Not infrequently a number of canals—many of them having a living membrane—exist in the additional tissue. In the cemental tissue there were canals, both transverse and longitudinal, which probably supplied nourishment to the tissues, and possibly to the pulp itself. In many instances an intimate connection was traced between the pulp and the cementum by means of canals passing through the dentine. Some of these canals were lined with a tissue similar, microscopically, to that found in the cemental layer, and apparently in some instances had been larger some time previous than they were at the time of extraction of the tooth. Another interesting point was the external contour produced by the additional tissue which frequently united two or more roots together, and formed one solid mass. Ankylosis of the roots of adjoining teeth or even the alveolar walls was rare, and might be accounted for by the fact that as the cemental tissue was deposited on the cementum, the alveolar dental membrane contained a number of giant cells near the external surface, which doubtless absorbed the alveoli ; at the same time a new tissue was being deposited upon the surface of the cementum, the work of these cells being the same as in the case of the permanent teeth, where they cause the absorption of the roots of the temporary teeth. In those cases in which a piece of the alveolus had come away during extraction, Mr. Caush had invariably found the connection between tooth and socket to be fibrous. In some cases the cemental tissue had been found to be deposited in irregular patches and nodules, the original tissue having been absorbed and the dentine scooped out into a series of semi-lunar cavities ; these cavities subsequently became filled with new tissue, resulting in the condition called enostosis. The tubuli of the dentine at the margin of this new tissue might be seen anastomosing with the canaliculi of the lacunæ of the new tissue, thus establishing direct communication either for sensation or nourishment This, Mr. Caush believed, was also the cause of the hyper-sensitiveness of the dentine immediately under the enamel. The interglobular spaces were filled with a semi-calcified substance, and communicate with the pulp through the tubuli. It was not an unusual thing to find encysted lacunæ in the deposits of the new tissue, as if one or more cells with their walls absorbed away had become calcified, and quite distinct from the surrounding tissue. The alteration of shape and condition of the pulp chamber and canals in exostosed teeth was very considerable. Pulp calcification was seldom seen in those teeth where secondary dentine was produced, but in cases of marked exostosis absorption of the dentine surrounding the pulp had gone on at the same time as the external changes of the root, so that the canals became enlarged in a most irregular manner. A second stage in the changes would seem to take place, namely a redisposition following on absorption. This tissue was characteristically similar to that deposited on the exterior surface, and to all appearances, was in many cases of the same microscopic structure. This might account for the difficulty in diagnosing between exostosis and disease of the pulp, though, as far as had been ascertained, gradual diffused exostosis did not produce acute pain. But pain existed when new tissue deposited at the apex of the root constricts the pulp at its point of exit, or where slight irregular nodular patches of new tissue were deposited over the root of a tooth. At these points there has been absorption of the original cemental layer, and penetration into the imperfectly calcified dentine in the granular layer, thus setting up irritation, through the impulse passing through the tubuli of the dentine direct to the pulp itself.

The PRESIDENT spoke in commendation of the evident labour bestowed upon the paper, and eulogised the beautiful micro-photographs by which it was illustrated. Discussion of a paper of that character was by no means easy.

Mr. F. J. BENNETT said the members would doubtless be inclined to agree with the President as to the difficulty of discussing a paper so full of detail. He would have been glad to have seen the specimens under a higher power so as to obviate an appeal to the imagination for the lacunæ and giant cells. He also had some difficulty in understanding how the giant cells could have been seen after they had been rubbed down with a corundum wheel. Again, in many cases canals might be seen passing between the surface of the root and the pulp cavity, and he had considered it to be in this way that the pulp chamber became absorbed, by the passage of osteoclasts down these canals to the cavity. Mr. Bennett had a specimen in which the entire interior had been largely excavated by means of cells leading from the surface of the teeth to the cavity along such canals. One point which struck him as being novel was the statement that there was no appearance of secondary dentine in those cases in which exostosis was present. Mr. Bennett could not recollect having met with secondary dentine in cases of exostosis, but its absence was a point which they should try and verify. He thought it would have been interesting if Mr. Caush could have furnished them with some details as to the cases from which the specimens had been selected, they would have been glad to know why it was that the pulp canals were enlarged, and a little clinical history would have helped them.

Mr. W. HERN wished to ask Mr. Caush if he had examined the loose bodies which are often found in the pulp chamber. There was also a point in connection with those canals which were shown in some of Mr. Caush's excellent specimens, in which the blood canals run from the dentine to the cementum. It seemed possible that these canals might explain the periostitis which occurred sometimes when devitalizing teeth. There was a periostitis which occurred when the pulp was half dead, that is to say the crown portions were dead and the other parts were not.

The PRESIDENT: There were one or two specimens which Mr. Caush had alluded to to be seen under the microscope, perhaps he would show these at the close of the meeting. There was one point which the President did not quite follow as the paper was being read, viz., as to the sensitiveness of the dentine close under the enamel, perhaps Mr. Caush would explain that more fully in his reply.

Mr. CAUSH desired to thank the Society for the kindly way in which the paper had been criticised. With regard to Mr. F. J Bennett's remarks, he would say at once that none of the slides exhibited had been touched by the corundum wheel. Mr. Caush thought he had made it sufficiently clear in his paper that the specimens had all been rubbed down by the method of Mr. Charter White, and that but for the information which Mr. White had given them as to his method his (Mr. Caush's) paper would probably never have been written. With regard to the giant cells which Mr. Bennett could not understand, Mr. Caush could only say that the slides were on the table to be seen under the microscope, which might help Mr. Bennett—possibly Mr. Caush had given wrong names to appearances. Then, again, with regard to the canals passing from the dentine to the pulp, if Mr. Bennett would remember, there were some of the slides projected on the screen in which the canals only passed half-way through the dentine, so that in these cases it would have been impossible for the canals to have passed from the dentine to the pulp, it must have been outwards. With reference to Mr. Hern's question, Mr. Caush had only examined a few very loose bodies—they were rather difficult to get at: in those he had examined he had found very little structure whatever, and as a rule a few tubuli scattered through the structure. With regard to the remarks of the President, perhaps Mr. Caush did not make himself quite clear; what he desired to prove was that the tubuli were hollow, and that sensation goes direct through them from the pulp, and in that case form a rude means of giving sensation. In conclusion he had only again to thank the Society for the kind manner in which the paper had been received.

The usual votes of thanks concluded the Meeting.

The American Dental Society of Europe.

We are requested to state that this Society will hold its Seventeenth Annual Meeting, at Heidelberg on the Neckar, in the beautifully situated Schloss Hotel, on August 3rd, 4th and 5th of this year.

The Officers for the year are: President, Dr. William R. Patton, Cologne; Vice-President, Dr. Isaac B. Davenport, Paris; Treasurer, Dr. Charles H. Adams, Frankfort; Secretary, Dr. Lyman C. Bryan, Basle; Executive Committee, Drs. Patton, Adams, and Wetzel; Membership Committee, Drs. Davenport, Jenkins, and Prof. Miller.

Members of the profession are cordially invited, and are requested to notify the Secretary at an early date of their intention to attend the meeting, contribute papers or demonstrate before the Society. Programmes will be issued by June 1st and may be had on application. The charming site of Heidelberg will allow the Society to intersperse its three days proceedings with excursions to interesting points and visiting the University and the magnificent ruins of the castle.

The members of the Executive Committee and the Secretary of the Society having met in Heidelberg on the 8th February, 1891, and having made the preliminary arrangements for the coming seventeenth meeting on Monday, Tuesday and Wednesday, the 3rd, 4th and 5th of August, now desire to prepare a full programme for the meeting and to this end request an immediate response from all the members to the following questions:

1. Do you expect and intend to be present at the meeting or not?
2. What do you propose to contribute to the interest of the meeting and in what department?
3. If you are to read a paper, give the title in full and the name of your colleague who is to open the discussion on the same.
4. Please notify the hotel proprietor a few days beforehand of the day of your arrival, as it will be the height of the season, and rooms must be engaged beforehand.

5. Please send the Secretary your name in full and exact address, with the replies to the above questions.

After a careful inspection of the town of Heidelberg, the beautifully situated Schloss Hotel, on the hill above the town, and overlooking the valley and the magnificent ruins of the castle, was selected by the committee for the place of meeting and special terms secured for the accommodation of from thirty to fifty members and visitors. Those remaining four days will secure pension rates of from 8 to 9 Marks a day, all included, for shorter stay 11 to 12 Marks per day.

The programme of the meeting, which will be issued early in June, will be arranged to combine excursions and other pleasant recreations with the usual work of the Society, and members will be able to visit and inspect many points of interest about the ruins, the valley, the town, and the University during the time of the meeting; and many will find the situation so attractive as to lead them to prolong their stay in this charming place.

The Society will consider the subject of illuminating the ruins of the castle at night, the cost ranging from 40 to 400 Marks.

Thursday morning the 6th, a party will be formed to visit Frankfort, where the Electrical Exhibition will be held this year, and the party will enjoy special facilities for inspecting the medical and dental departments.

The Frankfort *rendezvous* will be the dental clinic of Dr. Adams, Bürgerstrasse 7, five minutes' walk from Union Station, built and established by the Baroness Louise de Rothschild. This is a model institution of its kind, elaborately fitted up with all the modern conveniences, and patients may be had for any clinical demonstrations, which members may wish to give, by notifying Dr. Adams in time.

Members of the Society who intend to present papers should make arrangements with some other member to open the discussion on the subject under consideration, and if possible, send the paper or a synopsis of it to the said member that he may be able to present his matured thoughts on the subject and intelligently start the discussion that the contents may have due consideration from the Society.

If papers are received by the Secretary in Basle in proper form, by June 1st, he will undertake to have them printed in pamphlet form for distribution at the meeting, should the committee decide that their contents are of sufficient general interest to warrant the undertaking.

If notice is given by members who intend to demonstrate or operate clinically, in Heidelberg, arrangements will be made with some dental depot for securing chairs and engines, &c., but smaller instruments must be furnished by the operators.

The committee hopes that members will promise only what they are reasonably sure of being able to present, that other members who attend the meeting may not be disappointed in their expectations.

It has often occurred that members have allowed their names to go out on the programme as intending to present a paper who have not even attended the meeting. Only such papers will be mentioned on the programme as the committee is reasonably sure of.

The proceedings will either be printed by the Society or under special arrangements with some leading Dental Journal, as may be decided at the meeting. Members who intend to present valuable matter should have it in such shape as will make it immediately available for publication.

It will also be desirable to have the remarks of those opening discussions and others participating, written out and handed to the Secretary after the meeting, as a reporter may not be available,

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Students' Society, London Dental Hospital.

ORDINARY General Meeting, held May 25th, 1891, Mr. E. LLOYD WILLIAMS, President, in the Chair. The minutes of the previous meeting were read and confirmed.

Mr. HOLFOLD proposed and Mr. J. P. SMITH seconded the following new members:—Messrs. Pickering, Adams, Love, Acland, Whittington and R. Wheatley.

The SECRETARY read a letter from Messrs. Storer-Bennett and Paterson saying that they had read the papers for the past year, and they were of opinion that the Society's prize should be given to Mr. Arthur C. Gask for his paper on "Cocaine, and its uses in Dental Surgery."

The PRESIDENT proposed and Mr. HOLFORD seconded a vote of thanks to these gentlemen for the trouble they had taken.

The SECRETARY then announced, on behalf of the Librarian, that Mr. Brownie had presented to the Society the *Monthly Review of Dental Surgery*, from the beginning up to the time that it became the *Journal of the British Dental Association*, and the volumes up to 1878 of the *British Journal of Dental Science*, 25 vols. in all.

On casual communications being called for—Mr. STEELE showed two models from the mouth of a clergyman, aged 26, of a most remarkable size, and all the teeth in place and perfect, with exception of the left lower wisdom tooth which was not erupted.

Mr. MORLEY showed an upper model with a canine with a very well-marked cingulum making it look very like a bicuspid.

The PRESIDENT remarked that the models Mr. Steele had shown were very interesting, and the largest he ever remembered having seen ; he was very glad to have them for the museum.

The PRESIDENT then called on Mr. Blain for his paper on "The Differential Diagnosis of the Various Diseases of the Jaws."

Mr. COLYER opened the discussion and said he did not think Mr. Blain's paper was quite correct in its title, he did not agree with Mr. Blain about treating epithelioma palliatively, directly it was made out to be malignant it should be removed at once, there was a species of epithelioma called creeping epithelioma, which somewhat simulated necrosis of the upper jaw. He thought multilocular cysts were very liable to be confounded with myeloid sarcoma, but as the treatment was the same in each, viz., removal, he did not think that mattered. There was one cause of empyema that Mr. Blain had overlooked, and that was extension of inflammation from the nose. There was a new method of diagnosis for disease of the antrum which had been brought out lately, and that was to put the patient in a dark room with a small electric light in his mouth when if the antrum was healthy it would show through with a pink tinge, whereas if diseased it would be opaque. Epulis ought if possible to be treated without sacrificing the tooth. He thought it better to divide tumours up into classes, he always divided them into fluid and solid, and the latter again into innocent and malignant.

Mr. GASK said he thanked Mr. Blain for his paper, but thought the subject rather too wide. In empyema of the antrum caused by extension from inflammation in the nose the pus would trickle away whenever the patient lay down and so would cause no swelling. He thought one of the great difficulties of diagnosis was to distinguish when abscess ended and necrosis began; in necrosis the swelling was profuse and pus was discharged by several openings, while in abscess there was only one. In epulis though, they might try to save the teeth, he should advise students up for examination to say they would take them out. In reference to the periostitis of rheumatism and syphilis, he could understand the former being made worse by wet weather but not the latter.

Mr. W. HERN said he thought the paper was a little too ambitious and went over too much ground. He quite agreed with the previous speakers with regard to method in diagnosis, and he thought that in examining tumours it should first be made out whether they were solid or fluid, and impressed on students that they could not look too thoroughly into each case.

Mr. THOMSON said he had come as a listener, and it had given him much pleasure to hear Mr. Blain, though he thought the subject rather too extensive. With regard to method in diagnosis, it did not matter what that method was as long as you had one.

Mr. SCHELLING related, as an instance of want of method, the case of a patient who had an abscess on an upper molar dressed sixteen times by a dentist in the country, which, when it was examined at the Hospital, was found to communicate with the antrum.

The PRESIDENT agreed with most of the previous speakers in that Mr. Blain had given them too much, with regard to diagnosis they should learn to keep their eyes open and use some method and thought. Students missed a lot of things at the Hospital by not doing so.

The PRESIDENT then called upon Mr. Blain to reply.

Mr. BLAIN on rising to reply thanked those members present for the very free discussion, and said that almost all the points raised had been answered by one or other of the speakers. With regard to what Mr. Colyer said about the causes of empyema of the antrum, he remembered a case in which a bicuspid was pivoted and the pin driven into the alveolus instead of into the root canal, which resulted in an abscess of the antrum. He could not agree with Mr. Colyer about saving a tooth with an epulis round it, he had seen it tried and it had always recurred until the tooth was removed.

The PRESIDENT then proposed a vote of thanks to Mr. Blain for his paper, and announced that the next meeting would take place on October 12th, when Mr. Breeze would read a paper on "Some Minor Operations in and about the Mouth."

⁂ In last month's issue Mr. E. LLOYD-WILLIAMS, President of the Students' Society of the Dental Hospital of London, was made to have said "that he did not believe in plaster impressions, and thought that modelling composition, carefully used, fulfilled all requirements." This was really said by Mr. REID, the writer of the paper, in his reply. Mr. Lloyd-Williams strongly dissented from this view.

Dental News.

Amendment to the Tasmanian Act of 1889.

TASMANIA, 1890.

ANNO QUINQUAGESIMO-QUARTO VICTORIÆ REGINÆ No. 28.

AN Act to amend "The Dentists Act, 1884." [28 November, 1890.] Whereas it is desirable to amend "The Dentists Act, 1884," in the manner hereinafter appearing:

Be it therefore enacted by His Excellency the Governor of Tasmania, by and with the advice and consent of the Legislative Council and House of Assembly, in Parliament assembled, as follows:—

1. This Act may be cited for all purposes as "The Dentists Amendment Act, 1890."

2. Sub-Section "*e*" of Section Five of "The Dentists Act, 1884," is hereby repealed, and in lieu thereof the following shall be deemed to be and may be cited as Sub-Section "*e*" of "The Dentists Act, 1884"; that is to say—

"Has been for at least four consecutive years the apprentice or pupil of a person registered under this Act or the said Act, or entitled to be registered under this Act or the said Act, or of one or more such persons successively, and has been continuously and actually engaged during that period in the practice of Dentistry, and has attended a course of Lectures and Hospital Practice at the Dental Department of the Hobart or Launceston General Hospital, or at any Hospital recognised for the purpose by the Dental Board of Examiners, during a period of at least two years, upon such days and during such hours as the Dental Board of Examiners, with the approval of the Governor in Council, may from time to time by regulations direct, and shall have obtained a license under the Fourteenth and Fifteenth Sections of this Act; and such reasonable fees shall be paid for attendance upon Lectures and Hospital Practice as the Governor in Council may approve."

3. This Act and the "Dentists Act, 1884," save as amended by this Act, shall be read and construed together as one Act.

GOVERNMENT NOTICE. No. 579.

Chief Secretary's Office, 9*th June*, 1890.

The Governor in Council has been pleased, in accordance with the provisions of Sections 15 and 17 of the Dentists Act, 1884, 48 Victoria, No. 31, to make the following regulations.

By his Excellency's command,

B. STAFFORD BIRD,

for Chief Secretary, absent.

REGULATIONS UNDER THE DENTISTS ACT, 1884.

48 Vict., No. 31.

1. Each Member of the Board of Examiners shall continue in office during the pleasure of the Governor in Council, provided that any Member may resign by sending a written notice of his resignation to the Chief Secretary.

2. The Board of Examiners constituted under the said Act shall appoint one of their body to be Chairman of the Board, and such appointment shall be notified in the *Hobart Gazette*. The Chairman so appointed shall be the official organ of communication of the Board.

3. Three Members of the Board shall form a quorum.

4. There shall be two meetings of the Board in each year for the examination of candidates, one of such meetings to be holden in the month of January and the other in the month of July, provided that the Board may, in their discretion, and in any special case, appoint any time for an examination.

5. Every candidate for examination shall give to the Board notice in writing of his intention to present himself for examination at least one calendar month before the first day of the month of January or July as the case may be, in which the examination will be held at which he so intends to present himself, provided that the Board may in any special case dispense with such notice or any notice.

6. The following are the subjects in which candidates shall be examined :—

1. General Anatomy and Physiology (chiefly of the head and neck).
2. General Surgery and Pathology (chiefly of the head and neck).
3. Dental Anatomy and Physiology (human and comparative).
4. Dental Surgery and Pathology.
5. Gold and other fillings.
6. Chemistry.
7. Metallurgy.
8. Mechanical Dentistry, with practical tests

7. The examination shall be conducted by written or printed questions, to which the candidate shall give written answers, and also by oral questions and answers. There shall be a paper upon each of the above subjects, containing not fewer than two nor more than six questions. The time allowed for answering each paper shall be such time, not less than one nor more than three hours, as the examiner notifies on the paper. Each candidate will be required to execute and show specimens of mechanical work in gold, vulcanite or celluloid, as the examiners may decide.

8. The examination shall be conducted on the system of marks, and no candidate shall be deemed to have passed the examination who fails to attain the standard fixed by the Board for each subject.

9. The fee for each License shall be £1 1s.

10. The form of the License to be granted under the said Act shall be as follows :—

No. LICENSE.

Granted by the Board of Examiners under "The Dentists' Act, 1884" (48 Vict., No. 31).

We the undersigned Members of the Board of Examiners in Dental Surgery and Dentistry under "The Dentists Act, 1884," do hereby certify that having carefully examined

we find fully qualified to practise Dental Surgery and Dentistry in any part of Tasmania ; and we further certify that he is now entitled to be registered in the Dentists' Register under the said Act.

Dated this day of 18

Chairman.

Members of the Board of Examiners.

Royal College of Surgeons of England.

EXAMINATION FOR DIPLOMA IN DENTAL SURGERY.

THE FOLLOWING WERE THE PAPERS SET :—

ANATOMY AND PHYSIOLOGY AND SURGERY.

May 11*th*, 1891.—1.30 to 3.30 o'clock P.M.

ANATOMY AND PHYSIOLOGY.*—1. Describe the Submaxillary Gland and its function. 2. Give the course and distribution of the Hypoglossal Nerve.

SURGERY AND PATHOLOGY.*—3. Give the causes, symptoms and treatment of Necrosis of the Lower Jaw. 4. Give the symptoms diagnosis and treatment of Empyema of the Antrum of Highmore.

DENTAL ANATOMY AND PHYSIOLOGY AND DENTAL SURGERY.

May 11*th*, 1891.—5 to 8 o'clock, P.M.

DENTAL ANATOMY AND PHYSIOLOGY.† — 1. Describe Cementum. Wherein does it resemble and wherein does it differ from bone? What uses does it serve in the various positions in which it occurs? 2. Describe the various modes of attachment of Teeth. 3. Give the methods by which you would prepare Sections to demonstrate :—(I.) The entire tooth germ. (II.) The Dental fibrils. (III.) Interglobular spaces. (IV.) The nerves of the Pulp.

DENTAL SURGERY AND PATHOLOGY.†—1. What constitutional disturbances in early childhood set their mark upon the teeth? Describe and, so far as you can, explain the various defects thus produced. 2. Describe briefly the microscopical characters of Carious Dentine. Under what conditions has Dental Caries been produced artificially? 3. Give the composition of several Amalgams. What are the advantages and disadvantages of Palladium? What considerations determine your choice of an Amalgam?

Glasgow Dental Hospital—Prize Competition.

IN the Annual Report of the Directors, published some time ago, it was announced that a sum of £100 had been given by Mr. James

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* The Candidate is required to answer at least one of the two questions, both on Anatomy and Physiology, and on Surgery and Pathology, unless he is entitled by the Regulations to exemption from any of those subjects.

† The Candidate is required to answer at least two of the three questions, both on Dental Anatomy and Physiology, and on Dental Surgery and Pathology.

Wallace, Dental Surgeon to the Hospital, for the purpose of fitting up a laboratory in the hospital, and providing a prize of £20 per annum for four years to the most successful student in mechanical dentistry and in general hospital practice. The competition for the first year's prize of £20 has just been completed, and the prize has just been awarded to Mr. James Dick Forrest, son of Dr. Forrest, 14, Butterbiggins Road.

Royal College of Surgeons in Ireland—Dental Examination.

THE following gentlemen having passed the necessary examination have been admitted Licentiates of the College:—Mr. Robert Obadiah Bunting (Southsea), and Joseph William Thacker (Dublin).

The following gentlemen having also passed the necessary examination, have been granted the Diploma in Dental Surgery of the College:—A. R. Mechan (Dundee), A. Richards (London), W. H. O. Tibbets (Richmond).

Faculty of Physicians and Surgeons of Glasgow.

AT the May sittings of the Dental Board the following candidates were admitted Licentiates in Dental Surgery:—George Foster (Birmingham), Henry E. Goddard (Nottingham), C. W. Croft Handley (Stoke Newington), Percy T. Naden (Birmingham), Thomas D. Nicah (Partick), Frank Vincent Walker (Doncaster).

The following passed the first Examination:—Samuel Anderson (Glasgow), Henry Taylor (Glasgow). Four candidates were referred.

Legal News.

Prosecution of a Person using a Title implying he is Registered under the Act.

AT the R.M. Court, Coromandel, New Zealand, on Tuesday, January 27, before Messrs. P. J. Tierney and J. H. Harrison, J.P.'s, Harry Pittar was charged on the information of A. L. Smith with having, within the space of six calendar months last past, to wit, on the 19th day of December, 1890, at Coromandel, in the colony of New Zealand, used a title, addition, or designation, implying that he was registered under the Dentists' Act, 1880, he at the time of using such title, addition, or description not being registered under the said Act.

The accused was called, but failed to appear. Mr. Button appeared on behalf of the prosecution, and pointed out that there were two courses open to the bench, viz., to issue a warrant for his apprehension, or to deal with the case *ex parte* under the 64th section of the Justice of the Peace Act. He stated that he did not think the case was such as to necessitate the issue of a warrant. He had witnesses to prove that the defendant had advertised himself as a dental practitioner, and had practised as a dentist. He also intimated that it was not the wish of the prosecutor, who was acting on behalf of the Auckland Dentists' Association, that a heavy penalty should be inflicted, and suggested that a fine of £5 (the same as has been inflicted in similar cases in the south) would suffice.

The bench intimated that they would proceed with the case.

T. W. Rhodes, being sworn, deposed : I am the publisher of the *Coromandel News* (copy of paper produced), and the advertisement in the issue of December 16, 1890, was inserted by Mr. Pittar, and paid for by him after it had appeared.

A. E. Smith, being sworn, deposed :—I am apprenticed to a duly qualified dentist, my father. On December 19, after seeing the advertisement in the *Coromandel News*, I called on Mr. Pittar, and asked him if he was the dentist, and he said "Yes." I had a tooth drawn by him, and he took the measure of my mouth for some teeth. I was to pay him two guineas when the teeth were finished. He made an excuse, after going down stairs and returning to where I was, that he could not get the teeth done in time. Mr. Pittar's name does not appear in the list of qualified dentists, published in the *Gazette* now produced.

This concluded the evidence.

The bench, after a few minutes' deliberation, intimated that they felt inclined to fine the accused heavily on account of his not appearing to answer the charge ; but, as the counsel for the prosecution had expressed a wish that the fine should not be a heavy one, they would fine accused £5 and costs, £2 2s. solicitor's fee, 10s. witness's expenses, and 7s. Court costs.

It has been calculated that the electromotive force of a thunderbolt is about 3,500,000 volts, the current about 14,000,000 ampères, and the time to be about $\frac{1}{20000}$ part of a second. In such a bolt there is an energy of 2,450,000,000 watts, or 3,284,182 h. p.

THE DENTAL RECORD, LONDON: JUNE 1, 1891.

INFLUENCE OF FOOD AND HYGIENE UPON THE TEETH.

THE approaching conference on hygienics in London induces reflections among the thoughtful, concerning the close relationship which has now been shown to exist between hygiene and the growth and development of the individual. None will attempt to belittle the important part which the teeth must play in securing health and happiness to the individual, and as individuals when massed constitute the commonweal, the same reasoning forces upon us the belief that our teeth are likely to exercise no small influence upon the community at large. The insistence of examination of the teeth of those who now apply for certain posts in the public service goes to show that, however tardily, there is at length an acceptance of this fact in the minds of the medical advisers of the government departments. It may therefore not perhaps be too sanguine in us to hope that ere long at least some definite attempt will be made to maintain that healthiness of the teeth among children under government control, among soldiers, sailors, and civil servants, the absence of which is held to be prohibitive to admission to some of the government departments. We all admit the great importance of the surroundings among which our children are brought up, but as yet no very definite attempt has been made to formulate what such environments should be, nor has the question been grappled with how the requirements, when fixed upon, are to be brought within measurable distance of the dwellers in Whitechapel, Southwark, and the rookeries of St. Pancras. Socialistic dentistry is a phrase which calls up a smile, and yet many a man is driven into the arms of anarchism by conditions such as are determined by carelessness concerning the digestive tract, and especially by the poor quality and early shedding of teeth, the permanence of which is essential to the necessitous as well as to the wealthy. Improvements in the dwelling places of our poor, in the drainage and general environment both at home and at work have certainly done much to improve the health of the grown-ups and to foster the development of the children. There still remains very much to be done, and especially in the direction of individual, *i.e.* personal hygiene.

So long as the bulk of us, gentle as well as simple, regard the physiological problems of life, how we grow, and move and have our being, as purely outside the province of individual control, so long will death, disease and deformity abide among us. You need not tell a person twice that if he puts a light to gunpowder it will explode, but it seems one may din many times and oft into unwilling ears that certain foods must produce certain untoward results in the economy, and that the neglect of other essentials in dietaries will lead to equally bad effects, and the much talking is quieted by the senseless apish cry "Fadism, all fads." Yet few things are now more thoroughly demonstated than that errors in diet, whether wilful as in the case of the well-to-do, or witless and almost inevitable as in the case of the indigent, lead to depreciation in general health, to stunting and maldevelopment of babes and children. This is shown very clearly in the case of the teeth. Those who have examined the teeth of the offspring of the starving of our cities, tell us that they are rickety and deformed. The initial depreciation of the dental tissues, the heritage of these unfortunate little ones, is made worse by their careless upbringing and the absolute neglect which these organs meet with.

If dentistry is to be extended outside mere fashionable cosmeticism and carried into the domain of preventive medicine, we shall have to grapple with and find remedies for these evils, to trace them if possible to their source, and suggest measures which may lessen the initial evil, and then accepting the evils which already exist show how they may be dealt with. It may be the first question comes more especially in the province of the medical officer of health, the second undoubtedly falls to the lot of the dentist, and we do not hesitate to say that dentists are ready, willing and capable of tackling it when the State opens its eyes to the fact that the teeth of its foster children in its orphan, industrial, reformatory, workhouse, military and naval schools; of its soldiers and sailors, its criminals and its workpeople in Government workrooms, are of vital importance, and cannot be properly attended to by the medical officer who is attached to the institution in question. In the first place he is incapable from lack of proper training, and secondly he has not time, nor is he sufficiently remunerated for his work for him to expend the required amount of skilled and patient labour such duties require. The first step towards amelioration of this state of things must undoubtedly be the appointment of dental surgeons to all such institutions, and men selected who have leisure and inclination to do the work, and who will not hold the post simply as an advertisement for private practice.

Not Too Many Dental Graduates.—Under this caption an American contemporary says:—"The question of overcrowding the specialty of dentistry seems to be worthy of a passing notice Figures do not lie unless you make them do so. In the United States there are about 15,000 dentists. Allowing that ten per cent. of them drop out each year from death and other causes, it would require 1500 graduates yearly to take their places. It seems that this is about the rate in which the colleges are graduating young men, a per cent. of whom drop out before the completion of the first year of practice, and they continue to quit from time to time. Taking for granted that the above is true there can be no cause for alarm. It is safe to state that dentistry will never be overcrowded, as the number of men capable of practising the vocation is really small, when one considers the proper requisites of the competent dentist. There is also another factor to be considered, and that is the increased demand for dentistry by the masses, on account of their growing knowledge of the value of the teeth, causing them to seek the means offered for their preservation." It depends also upon where the 1500 graduates go to: it would seem from recent legislative enactments that they are not altogether welcome to *la belle France.*

THE INTERNATIONAL JOURNAL OF MICROSCOPY AND NATURAL SCIENCE is a very useful paper for microscopists. The Third Series, of which the current volume is the first, is satisfactory both as regards the matter it contains and the way in which it is presented. In the issue of May there is an interesting paper on the Gamasidæ, parasites which infest bees (Bombus) and beetles (Geotrupes and others) by Lieut.-Col. Blathwayt, F.L.S., which, although the Author deplores it as falling short of his anticipations, yet certainly contributes a large fund of information about these widely known but little studied creatures. The paper is well illustrated. Mr. C. W. Slater contributes a note on Hydrozoa which as far as it goes is excellent. One of the most enticing papers is that devoted to "Prehistoric Man in Europe." The first part of this is to be found in the April issue. Those of our readers who do not know of this periodical and who take an interest in the department of literature with which it deals will thank us for mentioning it, for it is really a useful one among the crowd of valueless journals which load our libraries.

THE *Ludgate Hill Monthly* is a new aspirant for favour. It contains fact and fiction of unequal merit, some of its papers being excellent. We wish it success, as it supplies at a very moderate price, 3d., a large amount of amusing and instructive reading.

FEW things are more desirable and few more difficult than to remove the odour of iodoform from the hands. For this purpose Bienert recommends (*Pharm. Zeitschr. Russl.*) washing the hands once or twice with flaxseed-meal in water. He states that the odour very quickly disappears.

The Dental Hospital of London and its Mechanical Department.

MR. J. SMITH TURNER writes to say that before taking an active part in fitting up this department he had through the kindness of Mr. Pearsall, seen his workroom in Dublin, and quite lately had the privilege of visiting it a second time. He had also visited the Edinburgh Dental Hospital and seen the arrangements of technical schools so approved of by Mr. Pearsall in his address to the Irish Branch. With all the information afforded by his visits to Dublin, Cambridge and Edinburgh before him, and notwithstanding Mr. Pearsall's strongly expressed opinion, he still thinks that the plan adopted at Leicester Square is that which is best suited to the circumstances and most likely to stand the tear and wear of experience.

International Congress of Hygiene and Demography.

SECTION II.—BACTERIOLOGY, LABORATORY AND MUSEUM.

The following gentlemen have already consented to send objects of interest to the Museum or to demonstrate in the Laboratory: Dr. Adams, Dr. Andrewes, Prof. Arbirg, Dr. Bokenham, Prof. Bouchard, Dr. Boyce, Dr. Bousfield, Dr. Binger, Prof. Celli, Dr. Charim, Prof. Chauvean, P. D. Coghill, Esq., Mons. Collin, Prof. Crookshank, Dr. S. Delépine, Dr. Despignes, Dr. A. Edington, Prof. Frankland, Mons. Gamelüa, Dr. Gordon, Prof. Hamilton, Dr. Hime, Dr. W. Hunter, Prof. Klein, Prof. Laveran, Dr. Lodge, Dr. Malanz, Prof. Mitadgrass, Dr. McSeeney, Dr. S. Martin, Everett Millais, Esq., Dr. Mitschin Roff, Dr. Murray, Mons. Pasteur, Dr. Plowright, Dr. D'Arcy Power, A. Pringle, Esq., Dr. Roger, Sir Henry Roscoe, M.P., Dr. Rouse, Dr. Armand Ruffer, Dr. Russell, S. Shattock, Esq , Dr. Sherrington, Prof. Straus, Dr. Vaillard, Dr. Vincent, Dr. Washbourn, Dr. F. C. Wood, Dr. G. S. Woodhead, Dr. Wartz.

APPOINTMENTS.

MR. J. A. GARTLEY, L.D.S.Eng., Honorary Dental Surgeon, French Benevolent Society.

MR. ALFRED KENDRICK, L.D.S.Eng., Honorary Dental Surgeon, Taunton and Somerset Hospital.

MR. FREDERICK W. MINSHALL, L.D.S.I., has been elected on the Staff of the Victoria Dental Hospital, Manchester, as Assistant Dental Surgeon.

J. PERCY OLIVER, L.D.S.Eng., has been appointed Assistant House Surgeon to the Dental Hospital of London.

ERNEST PARSONS, L.D.S., to be House Surgeon, London Dental Hospital

VACANCIES.

GUY'S HOSPITAL, S.E —There are vacancies in the dental school for five additional Assistant Dental Surgeons, each of whom will be required to attend on one morning or afternoon in the week in the dental department. Candidates must possess the qualification of L.D.S. Eng. Applications, with testimonials, to be sent not later than July 1st, 1891, to the Dean, from whom further information may be obtained.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

Dear Sir,—Would you kindly inform me through the correspondence column of the "Dental Record," whether a Dentist's or Medical man's wife holds the same position as a private individual with regard to her husband's patients, or whether she is privileged to call upon a lady resident simply because she has consulted her husband professionally? The question, of course, relates to suburban or country practices.

Yours, &c., BON DESSEIN.

[She takes precisely the same position as a private individual, and, if a new-comer, can only call after having been first called upon.—Ed., D.R.]

REVIEW.

A Treatise on the Irregularities of the Teeth and their Correction, including with the Author's practice cther current methods. Designed for Practitioners and Students. By John Nutting Farrar, M.D., D.D.S. Volume I, pp. 737. International News Company, London and New York, 1890.

To those who are only acquainted with Dr. Farrar's methods of regulating teeth by references to certain of his screw appliances in different works on dentistry, and occasional advertisements of them in the journals, the perusal of the volume before us will be a revelation—a revelation of the wide utility of the screw in the treatment of the great variety of dental irregularities, of Dr. Farrar's originality and ingenuity in its application, and not less of the infinite labour and pains bestowed by him during a long professional career on the study and treatment of these cases. Revolted, as he tells us, at the "torture and injury" formerly inflicted by strings and rubber bands, Dr. Farrar turned to the screw as an agent by which the force employed might be directed exactly to the point desired, kept absolutely under control, and regulated easily by the patient. Little by little its employment has been extended. In his hands its wonderful adaptability has been made gradually to disclose itself, and in the volume before us, we find instances of its use in the correction of almost all kinds of irregularities of position.

After an interesting though hardly relevant sketch of the history of dentistry "from the time of Moses to the present," Dr. Farrar enters on the consideration of Etiology. And here we are at once met by a serious defect. There is no such thing from the first page of this volume to the last, as a comprehensive classification of irregularities; no allusion whatever is made to the irregularities in size, form, number and structure. This strikes us as a glaring omission, in "the largest and most comprehensive treatise on the subject yet written"; nor is the classification of irregularities of position much more satisfactory. It is dismissed incidentally in a paragraph of six lines, which tells us there are four principal classes: those in which the malposed teeth stand, (1) outside; (2) inside the arch; (3) in the line of the arch but in wrong positions; and (4) cases where the arch itself is too large, too small, too wide or too narrow. Of the causes which lead to these various abnormalities, Dr. Farrar says much. He discourses vaguely, but at length, on the influence of evolution, the retention and premature extraction of the temporary teeth, hereditary insanity, the crossing of types and the intermingling of races, and concludes that "by far the great majority of cases of deformity in the arrangement of the teeth exist from one, or both of two principal causes, a primary and secondary, the former being pre-natal defect, the latter neglect." The pages devoted to this part of the subject are the least satisfactory in the book; they are vague, generalising and often irrelevant. Dr. Farrar does not descend enough to particulars, nor illustrate his remarks by reference to cases. He has attempted, "not so much to trace out the complexity of cause and its bearings throughout the various ramifications, as to lay open to view the field of phenomena in order that the reader may be stimulated to further investigation of this important subject." Nor are we consoled for this inadequacy of treatment by the author's belief that "the number of such deformities is on the increase," and "that they will continue to increase until either the science of breeding is studied and adhered to in the human race, or until *amalgamation* has *evolutionized* the different types into one."

Etiology being dismissed, Dr. Farrar in *seven* chapters expounds "The Philosophy of the Author's System." His fundamental principle is that the force employed should not be sufficient to cause inflammation in the tissues, or even more than the slightest amount of pain; that, as he phrases it, operations should be performed "within the limits of physiological function." It is certainly right to lay stress upon this fact, though we believe it is recognised and adopted in the practice of many besides "the Author." But we join issue with Dr. Farrar when he states that the action of the screw as used by him is in the strict sense of the word intermittent. He claims that by its use we obtain a period of pressure followed by a period of rest; that when the screw is turned a sense of tightness is occasioned, indicating the pressure exerted, but that this is shortly followed by a period when the sensation of tightness ceases and no pressure is being exerted. This surely is a misconception. The fact of there being no sense of pressure is no evidence that pressure is altogether absent. A lower central may be pushed out of line owing to the pressure caused by the eruption of the wisdom teeth, and yet no feeling of pressure may have been experienced by the patient. The pressure of the screw, as used by Dr. Farrar is not *intermittent*, it is only *variable*. Were there absolute cessation of pressure, the appliances would, in many of the cases figured drop from the teeth, for they are kept in place solely by the pressure exerted on the teeth which are being moved, and yet upon this groundless hypothesis, Dr. Farrar states as one of the main principles of "his system," "a recognition of the benefit derived from the law of labour and rest to the tissues involved"—a law the application of which to these cases is based, as it seems to us, not upon fact but fancy. But Dr. Farrar seems to attach more importance to this principle in his book than in his practice, for he tells us that he does not discard "constant" pressure altogether, he only regards it as "less scientific."

It is impossible for us to notice in detail, or even to enumerate all the appliances for correcting teeth, and retaining them in their new positions, which Dr. Farrar explains and figures. Many of them exhibit the greatest ingenuity, and the slightest study of this part of the book will testify amply to Dr. Farrar's originality and patience, but we feel too that many of the operations might be as well performed by apparatus far less complicated, and yet quite as effective. Dr. Farrar, it is true, regards as unscientific the "old methods" with their "large and clumsy appliances"; but simplicity after all is in these cases a sovereign virtue; vulcanite plates with springs are *not* of necessity, "large and clumsy"; and for the patient to be able to remove and replace the apparatus for purposes of cleansing without the least risk of interfering with its action is a gain well worth some slight sacrifice in point of size.

In some suggestive chapters on "correction of the teeth by grinding," Dr. Farrar calls attention to a method of treatment which is frequently overlooked, or at least not utilised so often as it might be. He shows how in cases of slight crowding and overlapping of the front teeth, particularly in the lower jaw, much may be done by reshaping them, to make them appear more even, and how in patients of a suitable age, teeth may, by a judicious grinding of their cusps, be forced into new positions by antagonism with those of the opposite jaw, or allowed to spontaneously move into correct positions from which they had previously been locked by the bite.

But perhaps the most valuable chapters in the volume are those at the end on "Extraction as a means of Correction." Here Dr. Farrar is at his best. He treats the subject systematically and judiciously. His remarks about the extraction of laterals, canines, and the six year molars are admirable. The chapters are illustrated largely by cases from practice, though in some of them the age of the patient is not given. This is an unfortunate omission, for the movement of the remaining teeth in the arch after the extraction of one or more, depends largely on the density of the alveolar process, and this in turn not a little on the patient's age.

Regarded as a whole we cannot consider the volume entirely satisfactory. It contains indeed much that is suggestive, much that is valuable, much that we should be at a loss to find elsewhere, and yet that we could ill afford to lose, but much also that is irrelevant, and not a little that is inaccurate. It is besides lacking in proportion. Though pleasantly and clearly written, the phraseology at places is fantastic, and the work as a whole too diffuse. Writing "for practitioners and students," Dr. Farrar forgets the proportion which the treatment of irregularities bears to the active work of the former, and the entire studies of the latter.

We cannot conclude without a word of commendation on the way in which the volume is got up. The paper and print are admirable, and it is lavishly and excellently illustrated.

OBITUARY.

Dr. WILLIAM H. ATKINSON.

Died at New York City, April 2, 1891, of pneumonia, William H. Atkinson, M.D., D.D.S., in the seventy-seventh year of his age.

The *Dental Cosmos* publishes the following graceful notice of this veteran dentist:—

"Dr. Atkinson was born in Newtown, Bucks Co., Pa., January

23, 1815. He graduated in medicine at the Sterling Medical College, Ohio, in 1847, and received the degree of D.D.S. from the Ohio College of Dental Surgery in 1859. He was married in 1840, at Meadville, Pa., to Martha C. Woodruff. He began the practice of medicine in Meadville in partnership with Dr. William Woodruff, his preceptor and father-in-law, and from thence removed to Norwalk, Ohio, continuing the practice of medicine and surgery. Becoming interested in dental practice, he removed to Cleveland, Ohio, and formed a partnership with Dr. Slawson. Dr. Charles R. Butler was his first dental student, with whom he subsequently formed a partnership. He removed to New York in 1861, and remained in practice there until the close of his life.

"Dr. Atkinson was connected as an honorary or active member, or presiding officer, with most of the more important local dental societies; was for a short time professor of the institutes of medicine in the New York College of Dentistry; served as president of the American Dental Association, and was a frequent contributor to the periodical literature of dentistry. For many years he was a prominent figure in the ranks of his profession, bearing the title of 'Father' or 'Pop' Atkinson, bestowed upon him in affectionate recognition of his readiness to impart instruction to all who desired or needed it. An allusion in dental circles to 'the grand old man' was always accepted as referring to him. His heartiness of manner and speech endeared him to his associates; gained the attention and won the regard of those with whom he was brought into fresh contact. He was perhaps more widely known throughout the country as a prominent dentist than any man now living—his reputation in this respect not being confined to his fellow-practitioners but extending to the general public.

"Dr. Atkinson was an excellent operator—had indeed few equals—was skilled in all the departments of his profession, and was well versed in the pathology and therapeutics of dentistry. He was a fluent talker, an enthusiast in his calling, and desirous of arousing a like enthusiasm in others. He was a dogmatic teacher, and impressed his hearers by his positiveness into acceptance of his theories, but his style of composition was so peculiar, and so marked by a lofty transcendentalism, as to negative to a great extent his usefulness as a writer and speaker.

"He was a constant attendant at all dental societies with which he was connected, and a frequent and always a welcome visitor to other dental organizations. He seldom, if ever, attended a dental meeting without being called upon to speak on one or more topics under discussion, and never failed to respond, not infrequently making his extempore contributions the feature of the occasion.

"It will, we think, be generally admitted that Dr. Atkinson has done more than any other one man to establish a fraternal feeling among dentists, and to promote in dental organizations the full and free discussion of all matters of professional interest, thus markedly stimulating the professional spirit among the practitioners of dentistry.

"The closing years of his life were saddened by the death of his wife and the loss within a short time of two sons who were engaged in dental practice."

THE DENTAL RECORD.

VOL. XI. JULY 1st, 1891. No. 7.

Original Communications.

ARCANA FAIRFAXIANA.*

By WILLIAM RUSHTON, L.D.S.

THERE has lately been placed in my hands a volume bearing the above name. The desire of the editor has been to reproduce the quaint old recipes in the handwriting in which they were first copied, during the seventeenth and eighteenth centuries, and he has certainly succeeded in giving us a peep into the domestic economy of an English gentleman's household of those periods. We not only get an insight into the mysteries of the still room, dyeing vat and drying room ; but also into those of the kitchen, and one solitary but very precious glance into the lady's boudoir.

Naturally the receipts for the cure of bodily ailments, including toothache, will interest us most, and I shall endeavour to briefly touch upon these remedies, some of which are in vogue at the present day, and probably will be to all time, and others which have mercifully fallen into desuetude, such as earth worms, lungs of a fox, gall of a hare, &c., to say nothing of such expensive drugs as pearls, rubies and gold leaf.

It will be noticed that there is a good deal of wisdom mixed with superstition, and as we come down from A.D. 1600 to 1770, we find, as would be expected, that the dried toad worn round the neck, and the Latin incantation, have given way to more practical and scientific methods. The cures solemnly affirmed to have been wrought by some of these remedies are hardly surpassed by the advertisements of patent medicines in our own day, although it is sometimes difficult to find in the recipe any one drug or combination of drugs which would be likely to be responsible for the cure alleged ;

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* "Arcana Fairfaxiana Manuscripta, a manuscript volume of Apothecaries' lore and housewifery, nearly three centuries old, used and partly written by the Fairfax family," edited by Mr. George Weddell, Messrs. Mawson, Swan and Morgan, Newcastle-on-Tyne.

for instance, lunacy is guaranteed to be cured in three or four days by syringing the nose with vinegar, &c. The number of ingredients too, in some of the recipes, rouses one's astonishment. In one plague water, there are no less than forty ingredients, thus markedly differing from the present day, when simplicity has quite taken the place of complexity. The time at which the remedy is to be prepared or taken, the colour of the animal which forms an ingredient, and the firm faith of our forefathers in wine or ale as a vehicle for the administration of drugs, all strike the reader.

The chief contributors to the contents of the book are the Hon. and Rev. Henry Fairfax and Mary his wife, the former chiefly turning his attention to recipes for curing the body (combining that duty with his cure of souls) and the latter evidently taking a keen interest in her kitchen. Her recipes for gingerbread and puff paste read most deliciously, though perhaps with a passing after thought of biliousness.

This good clergyman was uncle to Sir Thomas (afterward third Lord) Fairfax, the great Parliamentary General in the Civil War, of whom Milton wrote in such glorious lines, beginning—

> " Fairfax, whose name in arms through Europe rings,
> Filling each mouth with envy or with praise."

And he is also ancestor to the representatives of the barony down to the present day, the existing Lord Fairfax, the eleventh Baron, living in America, and holding the degree of doctor of medicine. Perhaps Ibsen would say that this bias towards medicine was an instance of the force of heredity. Another distinguished member of a branch of this illustrious family was Dorothy Foster, made familiar to us by the charming pen of Mr. Walter Besant.

In opening the book, we come upon the following humorous translation of a Latin epigram, which contains a good deal of truth :

> " Your sore (I know not what) doe not fare slow
> To cure with herbs ; which (whence I do not know)
> Place them—well pounc't—(I know not where) ; and then
> You shall be perfect whole (I know not when)."

I shall now proceed to give a few extracts of interest.

" For y^e bleeding at y^e nose. Probatum. Take a toade and drie it in Marche, put y^e same into some silke or sattene bagg and hange it about y^e neck of y^e party next the skinne, and by God's grace it will stanch presently."

Here the toad must be captured in March; but in another recipe it may be taken and dried in an oven, "So it doth not break, at any time of ye yere," it also more modestly says in the latter receipt that "it helpeth."

The following—shall I call it Liturgy?—was supposed to have powerful virtues in stanching bleeding at the nose:—

"Sanguis manet in te
Sicut Christus ferat in se,
Sanguis manet in tua vena
Sicut Christus in sua pena,
Sanguis manet in te fixus
Sicut Christus in Crussifixus.

Say this over three times, naming the partys nam, and then say the Lord's Prayer."

I should say if the friend who performed this ritual took sufficient time over it, it would be most successful.

Having been made acquainted with the powerful action of the dried toad for stopping bleeding, we find that frogs, too, have their uses for the same purpose. "Take linnen clothes and dipp them in ye green fome where frogges have their spawne 3 dayes before ye new moon." How the cloths are to be used does not transpire.

"For the swyming in ye head." This is a prescription (given to our Queen Mary by the "phisition" of her father-in-law, Charles V., Emperor of Germany), in the form of an embrocation. The most noticeable ingredient is "two spoonefulls of woman's milk of a man-child." The male was considered more "puissant" than the female, hence we have as ingredients, "urine of a boy," "pith of an oxe back," "take a cock."

We next come to an ointment of Divine origin, and one is in doubt as to whether the ingredients or the professed cures are in excess. "This Intreat is called flos unguentorum, for it cometh of Jesus Christ to a recluse by an Angell at ye red hill in Almaine, who wrought many marvels wth yt and never had other medicine." The ointment is directed to be spread half-an-inch thick and kept on until the patient is cured, hence, of course, it never fails.

Animal materia medica occupies now a very small place in therapeutics, and I have no doubt will occupy even less in the future. In this manuscript we see a large difference in this respect. For instance, in treatment for stone; in 1600 the remedy is the lungs of a fox dried, powdered and mixed with liquorice, &c; in

1766 we have alkaline and demulcent drinks, in fact, a treatment not very dissimilar from that of the present day.

Snail shells, washed and powdered, are the remedy "For one that cannot make water," while the snails themselves are used for various diseases; for instance, for the "yellow jandize" not only snails but "redd wormes" and excrementitious matter from the goose go to make up a medicine to be taken internally. Earth worms, dried and powdered, were the approved remedy for the green-sickness, the powdered heart of a toad or a mole, or the powdered after-burden of a woman (male child again) were taken for the falling sickness.

It is refreshing to turn from these somewhat nauseous though interesting details to "An Electuary y^{t} Quene Mary was wont to take for the passion of the hart." I shall give it in full. "Take damask roses, half blowne out, cutt off y^{e} white and beate your roses very fine and strain out y^{e} juice as much as you can, you may putt to it if you will a little rose water, to make it y^{e} more moist. Then take of y^{e} finest sugar that you can gett and make a sirop of it very thick. Then take rubies and beat them very fine, and likewise amber and pearle, a little amber greece, and mingle all these together with some of the sirop till it be somewhat thick, then take it morne and even uppon a knives point a little quantity, you may take it els at any other tyme when you think good. This medicine is very excellent and so approved." Nowadays, passion of the heart in the fair sex is allayed by rubies and pearls applied externally.

We have already seen the treatment of lunacy, by means of syringing the nose. The following is given as internal treatment:—"Take a Hedg-hogge and make broth of him, and lett y^{e} patient eate of y^{e} broth and flesh." I am told that the hedgehog is not at all bad eating, its flesh somewhat resembling that of fowls.

The following remedy for corns may have the virtue of being thorough, but I think it will be placed in the same category as destroying the pulp of a tooth by the actual cautery:—"Take an iron and make it whott, and seare the corne with it, then laie to it a plaster of galbanum and turpentine mixt together, and it will take it out and heale it in 9 daies." Perhaps, being a cripple for nine days did not matter so much then as in these go-ahead days.

The following remedy, too, may be efficacious, but certainly I think the cure is worse than the disease:—"For the skurff and scab in the face take mallowes good store and seeth them in urine well and wash the skurff with it."

The following recipe will interest us as dentists. "To draw the rewme (rheum) from the gummes. Take of the roote of pellitorie of Spaine, being in fine powder, then infuse it in strong viniger and make rounde smale peles (pellets) with it, and holde one now and then in thy mouth, this will purge y^e^ gummes and ease the toothache." No doubt a remedy for periostitis. Pellitory is still used, both in the form of the root to chew and in the form of tincture.* How different is the following recipe, which, however, is beaten in bare-faced impudence by one or two others which I shall mention later on. "A certain remedy for y^e^ toothache if it proceeds from heate. Take 2 or 3 plantan leaves, cutt them smalle with a knife, and putt them in a little piece of linninge cloathe and streine 2 droppes of juice into y^e^ parties *contrary care*, and before you can tell to 20 y^e^ cure is done."

(*To be continued.*)

COCAINE IN FRANCE.†

(BY A CORRESPONDENT.)

MR. PRESIDENT :—I have the honour of communicating to you, in this article, the result of my personal experience with regard to dental anæsthesia produced by the hydrochlorate of cocaine. I lay before you it is true nothing special, nothing new, but if I have resolved to give you the list of precautions which must be taken to avoid general accidents, it is because they are still unknown to many. So when an accident comes it is said to be the fault of the patient, that he is affected with a *special idiosyncrasy*. I deny that. For instance, I began my experience of cocaine more than four years ago, I have injected it for different operations more than 1300 times in individuals of all ages, of almost every race, of all temperaments and in different conditions. I have not yet seen a case of special idiosyncrasy.

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* An energetic local irritant and sialogogue. Tincture is used to relieve toothache.—STOCKEN, *Materia Medica*.

† *L'Univers Médical* for May publishes in its *revue thérapeutique* the following communication made to the *Société Odontologique de France* by M. OSCAR AMŒDO, Demonstrator to the *Ecole Dentaire*.

Out of this large number of cases I have only had eight general accidents. These accidents have always occurred in individuals in whom cocaine was for the time contra-indicated and at the commencement of my applying it, when I did not know the precautions which it is necessary to take in order to avoid these accidents. For instance, the dose which I injected for the first two years was five centigrammes, a dose which I now find a little too strong.

Amongst these accidents, four occurred in hysterical women and took the form of nervous crises. In four others (two women and two men) not hysterical, the general action of the drug was more marked. They had blanching of the face, cold perspiration, general weakness, cold extremities, dilatation of the pupil, acceleration of heart beat, with 130 and 140 pulsations per minute, difficulty of breathing (in the case of the two women I was obliged to do artificial respiration) and finally loss of consciousness.

All these symptoms disappeared in half an hour leaving no trace behind.

In several other cases I observed a slight paleness of the face, a peculiar sensation, analogous to that felt when on board ship, quickening of the pulse and heart, sometimes loquacity, a general depression with tendency to loss of consciousness, or else excitement with threatening of nervous crises.

When I used cocaine a second time with the same individuals, but taking the necessary precautions, no further accident occurred.

Well, gentlemen, to-day I can assure you with the greatest conviction that we may inject cocaine and avoid general accidents by observing the following indications :

Firstly :—The operator should not be frightened, that would be quite enough to alarm the patient and subject him, by suggestion, to the consequences of an imaginary accident.

If the patient is hysterical or neurotic it is necessary to act with great prudence and to use all the moral influence possible. At the least symptom of excitement the operation must be delayed. We must not allow an imprudent or too nervous person near the patient and we must especially avoid the too great solicitude of parents.

We must suggest to the patient the idea that cocaine is a harmless substance. Dr. Hugenschmidt and Dr. Rodier have noticed accidents follow pretended injections made with distilled water, in cases of individuals who knew the danger of cocaine.

As indispensable conditions it is necessary :—

1*stly*.—To remove the corset in the case of a woman, so as to leave the chest in a favourable condition for respiration ;

2*ndly*.—The patient should be in the horizontal position during the operation and for a quarter of an hour afterwards.

3*rdly*.—The patient should have fed well, and injections of cocaine should be made during the period of digestion rather than some hours after the last meal.

4*thly*.—Half an hour before he should be made to take a small quantity of cognac.

And 5*thly*.—The patient should never be left alone whilst he is under the influence of cocaine.

Suppose the patient becomes pale or has an attack of faintness. We should administer inhalations of ammonia, acetic acid, or better still 2 to 4 drops of nitrite of amyl.

We shall repeat the dose of cognac with 5 or 10 drops of ether, or else make him drink a glass of water with 10 drops of ammonia, and keep him lying down.

If these general symptoms continue with a tendency to unconsciousness and general prostration, cold water should be sprinkled on the face and chest, the inhalations of nitrite of amyl kept up and the respiration watched, and, if necessary, helped artificially.

If, on the other hand, the patient shows the preliminary signs of a hysterical attack, it is here that strongly directed moral influence should be brought into play.

Now, gentlemen, I come to the most important question—the dose.

Dr. Delbosc in the conclusions of his thesis, Paris, 1889, gives 20 centigrammes as the dose, and adds that this dose has been used by Dr. Reclus in a number of cases without any disagreeable symptom.

Dr. Rodier, in a well-written pamphlet, Paris, 1890, is more prudent than M. Delbosc, and only gives as a maximum dose 5 centigrammes.

I think that we, as surgeon-dentists, not holding a medical diploma, should not exceed the dose of 2 centigrammes, and not run the risk of having a fatal accident.

CONCLUSIONS :

1*stly*.—The injections ought to be made with antiseptic precautions, with distilled water recently boiled, the solution ought to be made at the time of using. Some sterilized absorbent cotton should be rolled round the end of the needle so as to filter the solution when filling the syringe.

2*ndly*.—The patient should have taken food.

3*rdly*.—He should be placed in the horizontal position.

4*thly*.—There should be no constriction.*

5*thly*.—He should be under the influence of alcohol administered half-an-hour beforehand.

6*thly*.—Individuals suffering from disease of the lungs, heart or kidneys, and cachectic subjects, etc. ought to be closely watched, and the dose for these should not exceed 1 centigramme.

7*thly*.—Females are much more likely to suffer from the general effects of cocaine than males.

8*thly*.—As antidotes to cocaine, inhalations of ammonia, acetic acid or nitrite of amyl will be used, sprinkling cold water on the face and chest, and an alcoholic drink will be taken with the addition of 5 to 10 drops of ether.

9*thly*.—The nitrite of amyl should be kept in a glass capsule holding 2 to 4 drops, which should be broken in a napkin at the moment of using.

10*thly*.—The piston of the syringe should be pushed in proportion as the needle is sunk into the tissue, in order to avoid the introduction of the liquid into a vein as well as the pain of the puncture. (Reclus.)

11*thly*.—The hydrochlorate of cocaine in a dose of 5 milligrammes to 2 centigrammes, employed as injections under the gum, produces a sufficient local anæsthesia to render painless such operations of minor surgery."

So says M. Amœdo. Most dental practitioners are aware of the contradictory opinions which have been expressed in this country (England) with regard to the use of cocaine in tooth extraction. The matter was tolerably well thrashed out in discussion at various professional meetings, and whilst the majority may have come to a conclusion against the use of this drug (from its uncertain action if for no other reason) it is understood that some practitioners still continue to inject it instead of resorting to the production of a general anæsthesia by means of nitrous oxide gas. There is, no doubt, a temptation for a dental surgeon who is isolated in his practice to rely upon an agent which he himself can administer with the hope of securing a *local* insensibility, and which is regarded, at all events from the patient's point of view, in a less serious light than the inhalation of a gas which produces unconsciousness. Even those patients who are so happy to find themselves in the hands of a specialist practising "painless dentistry," and who are told, and at first believe that it is unnecessary to extract teeth "however badly decayed," even these, truly unfortunate people, take an interest sooner or later in the question of anæsthetics. At all events it is to be regretted that a unanimous opinion with regard to the action of cocaine is not yet forthcoming. It would seem that on the other side of the Channel the same uncertainty exists.

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* Mdlle. Delcambre, who died at a dentist's, had a great cord of knots *de mortification* round her body, like certain *religieuses* wear.

The foregoing paper puts the matter in a cheerful light, but a casual perusal discloses points open to criticism. For instance, an argument may easily be raised upon the instruction to suggest to the patient that cocaine is a harmless substance. It opens up the whole question, although, perhaps, most will agree that in the dose recommended, 5 milligrammes to 2 centigrammes, the suggestion is justifiable.

It is more difficult to understand how the patient will accept the suggestion when it is accompanied by the necessary steps for the injection of the harmless substance, One of these, especially, in this country would not meet with general acceptation in the face of the wave of temperance supposed to be passing over us. Perhaps, however, the author's meaning is that when these precautions are taken then cocaine may be described as harmless.

M. Hallopeau in a communication to the Academy of Medicine appears to have expressed a different view with regard to symptoms following the use of cocaine. He thinks the drug of great service to oculists, who use it under such conditions that it is practically harmless. He recognises an acute and a chronic form of poisoning and comes to the following conclusions :—

1st.—A single injection may give rise not only to immediate threatening symptoms, but also to very painful, prolonged troubles.

2nd.—These latter are analogous to what happens shortly after the injection; they consist principally of a persistent headache with weariness, sleeplessness, numbness of limbs, attacks of faintness with giddiness and depression mingled with cerebral excitement, which is marked by talkativeness and much agitation.

3rd.—Small doses of the drug are quite sufficient to bring on these symptoms.

4th.—They may perhaps last several months.

5th.—They are especially noticeable in patients with a very excitable nervous system.

6th.—They can be attributed to the poison acting upon certain nervous centres.

Perhaps these remarks may tend to make the French dental surgeons hesitate to use injections of cocaine. They are not allowed to administer anæsthetics and M. Bouchard has been fined 15 francs for the illegal practice of medicine, inasmuch as he had injected cocaine, in the case of Jeanne Delcambre, without being possessed of a diploma. Unfortunately the young lady died soon after the extraction and M. Bouchard was charged with the responsibility of causing her death. He was acquitted on this count, the court coming to the conclusion that it was not proved that the small dose of cocaine employed had caused the syncope which proved fatal. M. Bouchard published a pamphlet, giving the details of this sad case, and some of them are of sufficient interest to warrant us placing them before our readers.

Mlle. X—— came at 7 o'clock in the morning, by appointment, and after two external and one internal injections of cocaine *au centième*, two loose teeth in the upper jaw were extracted with complete success. After a few minutes the patient wished to have a third tooth extracted from the left side of the lower jaw. It was loose like the others, and the rest of the cocaine left in the syringe was injected, and after some minutes the tooth was extracted. There was no bleeding and nothing to indicate any accident. The patient was given some black coffee, she appeared quite comfortable, although a little upset, and the dentist left her in the care of her uncle. On his return he found her in a syncope. Her clothes and corsets were loosened, she was placed on the floor and rubbing and cold water affusions were employed. The doctors, who were hurriedly called in, tried the same means and also injected ether and tried nitrite of amyl and also oxygen, but everything failed, and the patient succumbed in half-an-hour. The medical man charged with making the medico-legal report came to the conclusion that death was due to the cocaine.

M. Bouchard points out that when the doctor blamed the cocaine he did not know, and neither did the dentist, that a large knotted cord was wound round the patient's body four times, compressing the thorax ; this cord was so tight that it could not be cut without scratching the skin, and M. Bouchard thinks that this explains why the attempts at artificial respiration failed.

This fatality reminds one of a case occurring not long ago where, under somewhat similiar circumstances, the blame might have been laid to nitrous oxide instead of to much more likely causes.

Cases in which death occurred while the patient was in the waiting room, before reaching the dentist's chair, are not unknown, and the sympathy of all practitioners will be extended to those of their fellows who, unfortunately, are concerned in these rare cases.

In M. Bouchard's case, one would be inclined to attribute the syncope, as the Court did, to fear of the operation, or to the shock, slight though it may have been. The constricted thorax no doubt placed the heart at a disadvantage and afterwards prevented respiration from being maintained.

Meanwhile the legal aspect remains. A practitioner is fined, not for performing an operation which did result in syncope, but for using a drug which, under the circumstances, was acquitted of such an action.

A further communication on Cocaine was made at a meeting of the Académie de Médecine, on May 12th. The report* of the commission appointed to consider M. Hallopeau's communication on cocoainism was presented by MM. Panas and Magitot (*Bull. de l'Acad. de Méd.*, 3me Série, t. xxv, No. 19). After a review of the literature of the subject—confined almost exclusively to French sources—they cite the experience of M. Paul Reclus, who has performed more than 1,200 operations (removal of tumours, hydrocele, excision and erasion of joints, laparotomy, gastrostomy, strangulated hernia, etc.) without accident. M. Reclus finds that for mucous membranes the application of cocaine to the surface is sufficient, but if more profound anæsthesia is required it should be injected, no hypodermically, but intradermically. Care must be taken not to inject any of the drug into a vein; the injection should be made slowly, the quantity never exceeding 10 centigrammes, this amount being used only for extensive operations, and being administered in a series of injections at different points so as to embrace a wide surface. MM. Panas and Magitot, following in great part the teaching of M. Reclus, sum up their conclusions as follows: (1) Cocaine is an excellent local anæsthetic, which should on no account be banished from surgical practice. (2) It should, however, be used with the following precautions: (*a*) The dose should be proportional to the extent of surface it is desired to render insensitive, but should in no case exceed from 8 to 10 centigrammes; (*b*) cocaine should never be employed in persons suffering from cardiac complaints, chronic affections of the respiratory passages, or well-marked neurotic diathesis; (*c*) it should be injected *into* and not under the mucous membrane and skin; a 2 per cent. solution is the best; it should always be prepared fresh and injected with sterilised syringe; (*d*) the patient should always be in the recumbent position when the injection is given even if the head has to be raised afterwards; (*e*) the drug should be of the most absolute purity, and in particular free from any admixture of toxic alkaloids: (*f*) it should be given in divided doses, an interval of some minutes being allowed to elapse after the injection of the first portion; this will give an opportunity of observing whether any untoward effect is likely to occur. (3) Used in this way cocaine has obvious advantages over chloroform, ether, etc., one of the chief being the possibility of operating without assistance. (4) The anæsthetic effect always lasts long enough to allow of the performance of "all the operations of ordinary surgery." In the discussion which followed the reading of the report M. Constantin Paul spoke of the internal administration of cocaine, pointing out that doses of 15, 20, and even 30 centigrammes could be taken in this way without danger He said the intradermic injection was very painful. M. Laborde, while admitting that much larger doses could be taken by the mouth than could be safely given hypodermically, and that remarkable analgesic effects could thus be produced in cases of gastralgia, etc., said that he had seen serious accidents from the internal administration of large doses. The conclusions embodied in the report of MM. Panas and Magitot were adopted by the Academy.

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* "BRITISH MEDICAL JOURNAL," June, 1891.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN.

The Ordinary Monthly Meeting of the above Society was held on the 1st ultimo. Mr. S. J. Hutchinson, M.R.C.S., L.D.S., President, in the chair. The Minutes of the preceding meeting having been read and confirmed,

Mr. G. O. Whittaker, L.D.S.Eng. (Manchester), was nominated as a non-resident member.

Mr. Horatio C. Meriam, D.M.D.Harvard (Mass., U.S.A.), was elected as a corresponding member.

The Curator (Mr. Storer Bennett) announced that Mr. Henry Sewill had presented a series of specimens illustrative of his paper, and he also stated that the supplementary catalogue of the Museum had been written up from 1884 to date. The catalogue was kept in the Museum, and might be consulted by the members.

The President remarked that the Society was very much indebted to Mr. Storer Bennett for the considerable labour and trouble he had expended in writing up the book.

Mr. Barrett showed a clamp made for him by Messrs. Krohne and Sesemann for the purpose of compressing a plug into the socket of a lower molar to check post-extraction hæmorrhage. The patient had been quite unable to keep *in situ* any compress applied in the usual manner but with this appliance the bleeding which had persisted for four days after the extraction of a tooth was arrested in thirty-six hours, the clamp remaining unmoved during that time.

Mr. Barrett also showed, and presented to the Museum, models of a greatly underhung bite. The patient was twenty-one years of age and up to the age of ten his bite was normal. The condition had not been inherited. The maxillæ are about of equal length in an antero-posterior direction. The upper wisdom teeth were not erupted ; the lower wisdom teeth were of large size and articulated with the upper second molars. It would appear that the lower jaw had been thrust forward, or that the angle had become specially obtuse. Neither of these conditions, however, were now to be readily demonstrated when the patient was examined, and the cause of the deformity was somewhat obscure.

The PRESIDENT said that the clamp seemed a very ingenious arrangement for supplying the place of digital compression usually resorted to and found useful.

Mr. F. J. BENNETT thought that the last case might be accounted for by the unusual angle of the ascending ramus with the body of the lower jaw. Being an obtuse instead of a right angle, it threw the jaw forward, and this direction once being given, its tendency was to increase.

Mr. R. H. WOODHOUSE, while commending the ingenuity of the clamp, expressed a preference for his own method of ligaturing in cases of hæmorrhage, as it was more comfortable for patients, enabling them to sleep and masticate without much inconvenience. In Mr. Barrett's case Mr. Woodhouse would have ligatured the teeth on either side, round the bicuspid in front, and the second molar behind ; then plugged the socket with styptic colloid ; placing a piece of cork over the plug, drawing the tails of the silk ligature and tying them firmly. Only within the last week he had adopted this method in a stubborn case in the hospital ; the patient remained some time to test its efficiency, and it was completely successful.

Mr. J. ACKERY, being called upon by the President, regretted to have to begin with an apology. He had hoped to bring the patient for examination at the meeting, but being a working man he could not leave his work ; the same cause had prevented Mr. Ackery's obtaining a model, but he hoped on some future occasion both to bring the patient and obtain a model. The case presented a rather unique condition of the right side of the lower jaw. The man was thirty-five years old, and it was alleged that he had never had any teeth in that region with the exception of an incisor —probably the central—and a molar—probably the second molar Mr. Ackery called upon the mother, who was seventy-three years of age, in the hope of eliciting some information which might throw light upon the case, but the old lady's garrulity and inexactness made it quite impossible to learn anything beyond the fact that the patient had had no illness which could in any way affect the jaw ; the only thing he had suffered from was fits. The case was peculiar, and was not one to be accounted for by the possibility of teeth having been removed, as the jaw itself was not developed on that side.

The President invited any members who had met with similar cases to relate them. It would be recollected that Mr. Ackery had on previous occasions brought to their notice cases of bilateral absence of teeth.

Mr. C. ROBBINS reminded the Society that in January of this year he had presented the model of the mouth of a patient, aged twenty-one, in which there was an entire absence of central, lateral and canine on the left side. He would be seeing this patient again in the course of a few days, and would make further enquiries as to the temporary teeth. He was waiting to see if there were any more teeth to come through, as a fulness about the palate existed. As might be supposed, the jaw had a very abnormal appearance.

The SECRETARY then read a paper, communicated by Mr. F. H. BALKWILL, L.D.S.Eng., on—

"SOME MORPHOLOGICAL DENTAL IRREGULARITIES IN SOME OF THE SKULLS IN THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS, ENGLAND."

The Notes were made some years ago when Mr. Balkwill was interested in the development of irregularities in the cusps of modern English teeth, as compared with those of less civilised races. Some 400 crania were examined ; the skulls were on shelves in cabinets, and though they had seemingly been frequently rearranged, the number on each particular skull appeared not to have been altered, for, on a visit last year, Mr. Balkwill was able readily to refer to them again by their numbers. Mr. Balkwill examined the skulls in batches, and without going into details, which could not be appreciated except with the specimens to refer to, the chief points of interest resulting from his examination seemed to be as follows :—

In the first batch it was evident that many of the skulls belonged to individuals who had died by violence, which had spoilt the dental armature. Interested parties, in order to make up appearances before parting with the skulls to the museums, had supplied the deficiences thus caused. The skulls found in this state had been marked *apocryphal*. Mr. Balkwill had supposed that the extra lingual cusp on the upper molar, often observed in English patients, would not have appeared in savage tribes, but in this he had been mistaken, for he found ten crania having extra lingual cusps on the superior molars, out of 433 examined. This cusp, however, was situated rather anteriorly to the position observed in English patients. Two skulls had extra roots, or indications of them, in five bicuspids, in each case showing a simian approximation. Two others (one of them, No. 1301, referred to in the discussion) had peculiarly formed and large second lower bicuspids. In practice he had occasionally met second bicuspids with peculiarly flattened crowns. Mr. Charles Tomes once asked Mr. Balkwill if he had noticed this flattening in first lower bicuspids, and this had led him to hope that the notes might be either useful or interesting.

The President said that in listening to Mr. Balkwill's short paper, perhaps the most striking fact was that an examination of 400 crania should not have disclosed a greater number of abnormalities than Mr. Balkwill had discovered. There seemed to be only one case of caries. There were certain differences in shape, and instances of certain additional cusps on the molars. Perhaps the most interesting case was that of the wisdom teeth not through, and extraordinary development of second lower bicuspids. It was to be regretted that there were not more models, which would have aided the discussion of the paper.

Mr. F. J. Bennett was inclined to think after having seen the model of No. 1301, that the tooth described as a badly formed molar was a retained second temporary molar, from the fact that it lay on a lower level than the other teeth, that the fangs were exposed, that it was carious, and also from the shape.

The President felt bound to confess that the same idea occurred to him, but the model being only a plaster cast he did not feel justified in making the same comment. He thought the point to which Mr. Balkwill desired more particularly to draw attention to in this case was the peculiar pinching of the lower bicuspids.

Mr. Henry Sewill's paper was then read,

"On the Artificial Production of Caries."

Dental caries had already been artificially produced by Dr. Miller, of Berlin, who had lent Mr. Sewill a selection of specimens by which he (Mr. Sewill) was able to verify the fact that the microscopical appearances were virtually identical with those of natural caries. These slides were also examined by Mr. Arthur Underwood and Mr. Pound, and this fact was reported by Mr. Sewill to the Society some two years ago. The investigations of Messrs. Milles and Underwood, published in 1881, made it certain that caries might be artificially produced. It had been demonstrated long before, that the disintegration of enamel and dentine was mainly brought about by the action of acids, and it was also proved that the acids were in the main the products of fermentation of organic *débris* lodged upon or about the teeth. But in those days fermentation was looked upon as a purely chemical process, and the fact that proliferation of micro-organisms was essential to it was not recognised. Hence not only arose failure to produce caries by artificial means, but inability existed to interpret and fully account for several of the peculiar appearances presented by the tissues under microscopical examination. Messrs. Underwood and Milles were able to clearly show that these appearances were due to the presence and action of micro-organisms, and that the presence and action of organisms were essential to the production and progress of caries. Mr. Underwood commenced a series of experiments in producing caries artificially, but owing to the pressure of other work, abandoned them before he had more than partially carried them out ; Dr. Miller, however, had fully succeeded, following on the same lines. The success of the experiment, of course, depended upon whether conditions sufficiently like those existing within, could be created out of the mouth. It was next found that with the exception of leptothrix, all the organisms present in caries could be cultivated, either together or isolated, out of the mouth. Rather more than a year ago Mr. Sewill in conjunction with Mr. Pound began to experiment. After trying various mixtures of organic substances such as occur in the mouth, they arrived at the conclusion, that the best for the purpose was simply bread mixed with saliva. In what proportion was immaterial, but one part bread to eight saliva gave good results. It was not necessary to describe all the failures with other substances, but some which were significant might be mentioned. Meat with saliva remained alkaline, and if a small quantity of acid were added became again rapidly alkaline. Albumen, whether as white of egg or other forms, acted in the same way. Saliva and starch produced little acid, which was soon exhausted. About an ounce of the mixture sufficed for several teeth. They were immersed in the mixture in glass-stoppered bottles and kept at a temperature of about 94 to 98° F. and unstopped about once a day for examination. If the mixture became putrid it at once showed an alkaline reaction. The teeth were then taken out, well washed, and the mixture renewed. It became rapidly acid and remained so (unless putrefaction to a great degree supervened) for three to five weeks. The acids present were acetic and lactic, and of the former 5 per cent., and of the latter ·5 per cent., were found after three weeks. The effects upon the tissues were precisely the same as in natural caries. A tooth wholly immersed was of course attacked all over at once, but the disintegration advanced more rapidly where patches of ill-formed enamel or flaws or fissures allowed rapid access of agents to the dentine. The decay, as in natural caries, progressed more rapidly in that tissue than in the enamel. The enamel became undermined, and extensive pigmentation or discolouration of the affected part commonly took place.

The object of Mr. Sewill's experiments being to produce caries as rapidly and as extensively as possible, no attempt was made to imitate all the conditions of overcrowding and irregularity which govern the development of natural caries. There could be no doubt, however, that if the action of agents were restricted to one spot, that spot alone would be affected ; and it was sufficiently evident that minute particles of acid forming *débris* of a character such as adhere to the teeth in the mouth would be much slower in their action than a mass of matter such as Mr. Sewill had employed. He had, however, found that the rapidity of the disintegrating action in different teeth was governed by the structural qualities of the tissues. The experiments had been mostly made upon sound teeth but with carious teeth the decay had continued ; and if the cavity were previously excavated decay attacked first at that point and advanced most rapidly through the exposed dentine. Pigmentation or discolouration, as already stated, was present, and it was found also that the carious dentine readily absorbed stains introduced, such as are often admitted to the mouth in medicines or articles of food. Staining in natural caries is no doubt often due to this cause. The phenomena attending the invasion of organisms and their proliferation along the tubes differed in no respect from natural caries. The "zone" was present, also "pipe-stem" appearance. Another appearance, which also occurs in natural caries, and which at first first looked like "pipe stem" dentine in vertical section, was discoverable, but on close examination proved to be a distinct phenomenon. The sections did not take stain as did the "pipe stems." The tubes seemed dilated and filled with highly refractive bodies. These bodies were cylindrical in shape, and they split up into fragments of varying length. It was possible sometimes, by squeezing a section, to force these bodies from the orifices of tubes. Transverse sections of this altered dentine were also to be obtained.

They resembled "pipe stem" dentine, but the outlines were smaller in circumference and the refractive bodies occupied the tubes. The organisms were best displayed after staining with aniline violet. The colour could be washed out of the tissue by spirit after being fixed in the organisms by treatment with potassic iodide solution. To show tissue changes the sections could then be stained with orange rubin, which differentiated the altered tissue beautifully. Unaffected dentine showed deep red, the "zone" faint pink, "pipe stems" red with lighter centre, and dentine in the last stage of softening light yellow. In Mr. Sewill's opinion the artificial production of caries might perhaps be considered a crucial experiment by which the last shreds of doubt as to the essential character of the disease must be destroyed. Within late years controversy on this subject had died down, and he doubted if it would ever be revived. At any rate if it were, he should take no part in it. He had said his last word on the subject, for he felt that few facts in the range of science were more conclusively demonstrable than those concerning the causation and nature of dental caries.

It was now much more than a quarter of a century since Sir J. Tomes laid it down as his opinion that "caries is an effect of external causes in which so-called 'vital' forces play no part, that it is to a great extent due to the solvent action of acids which have been generated by fermentation going on in the mouth; and when once the disintegrating process is established at some congenitally defective point, the accumulation of food and secretions in the cavity intensifies the mischief by furnishing fresh supplies of acid"; and further, he pointed out that "inasmuch as no characteristic appearances can be found to distinguish caries occurring in living from those in dead teeth refixed in the mouth as artificial substitutes, the hypothesis of vital action in any way modifying the disease must be abandoned *in toto*, and dental caries cannot, strictly speaking, be said to have any 'pathology.'"

This definition of caries was in its essence not less exact now than when first penned; the knowledge of bacteriology since acquired had merely confirmed and established its truth.

DISCUSSION ON MR. SEWILL'S PAPER.

The PRESIDENT felt that their chief difficulty in discussing the paper was in connection with the specimens by which it was illustrated. He ought perhaps to explain why there were no photographs or drawings of them. The reason was that the specimens were under a high power, the objectives being mostly 1/12th in. It would be necessary, therefore, that they should examine the actual specimens, and he thought it would be more satisfactory upon the whole. Probably the meeting would be more productive of interest if they proceeded at once to discuss what had been read, and spend the remainder of the time examining the specimens.

Mr. HOWARD H. MUMMERY said Mr. Sewill had kindly sent him a number of the specimens prior to the meeting. He had examined them, and, like all Mr. Pound's specimens, they were most beautifully prepared. Having also had opportunities of examining many specimens of artificial caries prepared by Dr. Miller, he had been able to compare these with them, and thought the Gram method employed by Mr. Pound was perhaps better adapted for clearly demonstrating the individual micro-organisms than the simple staining usually employed. In his recent experiments Dr. Miller had added *meat* to the bread and saliva, and changed the mixture every three days. With regard to Messrs. Milles and Underwood's experiments, if Mr. Underwood had been present Mr. Mummery thought he would be the first to acknowledge that in their experiments on the artificial production of caries, they did not sufficiently take the putrefactive processes set up into account. Mr. Sewill had said, "with the exception of leptothrix all the organisms present in caries could be cultivated out of the mouth, either together or isolated." Mr. Mummery did not think that this was quite the fact, and quoted Dr. Miller in support of his opinion. There was a difference between artificial and natural caries, namely, that the organisms in artificial caries did not give the violet reaction with iodine. He had noticed this some time ago, but accidentally omitted to mention it in his book. The reason he believed to lie in the fact that the organisms giving this reaction cannot be cultivated out of the mouth. The pipe-stem appearances in caries, to which he had drawn Mr. Sewill's attention, were those seen in vertical section, and he had never seen them take any stain. He did not think that the so-called pipe-stem appearances, seen in transverse section, in which stained masses of various diameters were visible, were due to the same cause as these appearances in vertical section.

Mr. **Charters White** said that it was a subject into which he had not gone very much. In conversation during the reading of the paper he had remarked that probably the acid action of the chemical employed might prevent the pipe-stem from taking very deeply. In his experience it was a very difficult thing to stain an acid preparation.

The **President** said that as Mr. Pound was present, he thought it would add very much to the interest of Mr. Sewill's paper if they could hear him on the subject.

Mr. **Pound** described in detail many of the experiments which had resulted in the specimens exhibited. Anærobic organisms, at least many, could not be cultivated out of the mouth, and were divided into two classes, viz. : those which could and those which could not live without oxygen. The sole object of Mr. Sewill's research being to show that artificial caries could be engendered by bacterial action, no attempt was made by Mr. Pound to isolate any individual organism in the cultivations made by him for Mr. Sewill.

Mr. **Storer Bennett** desired to add a tribute of praise to the beautiful specimens cut and stained by Mr. Pound, and to thank Mr. Sewill for having brought them to the notice of the Society. It was interesting to see that his (Mr. Sewill's) conclusions were identical with those propounded by Dr. Miller in his German work. It was a matter of common knowledge that the bulk of Prof. Miller's observations were published in separate papers in the *Dental Cosmos* and *Independent Practitioner* a good deal earlier than the German work itself appeared, and it would be noticed that nearly all the observations Dr. Miller had made had been borne out by Mr. Sewill subsequently. As Mr. Sewill had pointed out, the reason Milles and Underwood were not successful was, as Dr. Miller stated, that fermentation was not allowed to go on, and the putrefaction was alkaline and not acid. Mr. Storer Bennett thought that it was due to Prof. Miller, whose work on this subject had been going on for the past nine years, that the fact should be put on record that Mr. Sewill's work was merely a verification of Dr. Miller's placed before the profession years ago.

Mr. **F. J. Bennett** wished to say that twenty years ago they were on the eve of a discovery such as Dr. Miller had made. Coleman and Cartwright were experimenting with saliva and bread, but they did not notice that the solution became alkaline. Nevertheless, they were on the right tack.

Mr. G. Cunningham said with regard to some remarks which had fallen from Mr. Pound, he thought he (Mr. Pound) was inclined to exaggerate the fact that certain micro-organisms were easily cultivatable out of the mouth, and when this could not be done they were probably of an anærobic nature. There was a certain organism which was found about the mouth—a brick-red orange growth about the necks of the teeth. Here was a pure culture frequently found in the mouths of young people. If one attempted to cultivate it, it would be found very difficult, the reason being that the proper media for the cultivation of these organisms had not been discovered, and so far Mr. Cunningham thought that part of Mr. Sewill's paper was not justified. Another point he wished to touch upon was the determination of the acids—acetic acid and lactic acid. It would be interesting to know how far the method employed was quantitative, and to have had some information as to the means by which the investigation was carried out. It was a well-known fact, that the determination of lactic acid was a very difficult matter, and this was one of the most important parts of Dr. Miller's work. It was mainly owing to Dr. Miller's great qualifications in other departments of science that his work was so reliable. With reference to the pigmentation, Mr. Cunningham believed that the presence of air was also a factor, and concluded with some comments on "pipe-stem" appearances.

The President remarked that the discussion had certainly been carefully limited to the title of the paper, a course which he thought had been fully justified. The opportunity to discuss vital action had not been accepted.

Votes of thanks and announcements for next meeting, which will take place in November, concluded the business.

General Medical Council.—The Case of Mr. Goodman.

Friday, May 29th.

Sir Richard Quain, President, in the chair.

The Registrar: The Council has now to receive from the Dental Committee a report as to the facts of the case of Henry

Louis Goodman (registered on July 31, 1879, as "in practice before July 22, 1878"). The charge, as formulated by the solicitors, is :—

"That he had issued and published, and caused to be issued and published, advertisements and other public announcements falsely describing himself in them as Surgeon Dentist to the Queen's Household, and Surgeon Dentist to the Household of Her Majesty the Queen and His Royal Highness the Prince of Wales, the effect of such advertisements and public announcements being to convey to the public the false idea that he held an appointment in the Queen's and Prince of Wales' households, and that, after being repeatedly warned against continuing to issue and publish the said false and misleading descriptions, he had persisted in issuing and publishing the same, and had not withdrawn them."

Mr. Goodman is in attendance, and the first business is to move that the report be received and entered on the minutes.

Mr. WHEELHOUSE : I move that this report be received and entered on the minutes.

Sir DYCE DUCKWORTH seconded the motion, which was agreed to.

Mr. Goodman was then called in.

The PRESIDENT : Mr. Goodman, our solicitor, Mr. Farrer, is present to advise the Council, and also to state the charges that have been made against you for unprofessional conduct. He will in your hearing inform the Council what the charges are against you.

Mr. FARRER : This gentleman was summoned for Wednesday, but his case could not be reached owing to previous business taking up your time, and he has come again to attend to-day. The facts have been found by the Dental Committee. You will recollect the finding of the Dental Committee is conclusive as to the facts, so that you have not to go into those facts, but to consider what those facts, as found, lead you to. They have found in their report, in accordance with the bye-laws and regulations of this body :—

"(*a*) That Henry Louis Goodman was registered in the Dentists' Register, on July 31st, 1879, as having been 'in practice before July 22nd, 1878,' and with the address 41, Ludgate Hill, London, E.C.

"(*b*) That Mr. Goodman in the year 1890, and since, has styled himself 'Surgeon Dentist to the Queen's Household, 1, Ludgate Hill, London,' and 'Surgeon Dentist to the Household of H.M. The Queen and H.R.H. the Prince of Wales, Glasgow, 251, Sauchiehall Street,' both in advertisements and on a brass plate on his door at Ludgate Hill and in other ways elsewhere.

"(*c*) That Mr. Goodman holds no such appointments.

"(*d*) That the Lord Chamberlain of H.M.'s Household in January, 1890, called Mr. Goodman's attention to the fact that he had assumed these titles without warranty.

"(*e*) That Mr. Goodman claimed the right of continuing to use these titles, and the Lord Chamberlain complained to the GENERAL MEDICAL COUNCIL of this action on Mr. Goodman's part, June 11th, 1890.

"(*f*) That the solicitor to the GENERAL MEDICAL COUNCIL, under directions from the PRESIDENT, on June 17th, 1890, pointed out to Mr. Goodman that by continuing the use of these wrongly assumed titles he had rendered himself liable to be brought before the COUNCIL under the Dentists Act.

"(*g*) That on April 1st, 1891, the Lord Chamberlain again complained to the GENERAL MEDICAL COUNCIL that Mr. Goodman continued the use of the said titles in advertisements in Liverpool and in the Northern Counties.

"(*h*) That on April 3rd, 1891, Sir Dighton Probyn, Comptroller of the Prince of Wales' Household, sent a pamphlet to the REGISTRAR containing the objectionable announcement, with a request that the MEDICAL COUNCIL would take steps to put an end to such advertisement.

"(*i*) That Mr. Goodman continued the use of the said titles to May 6th, 1891."

Since then Mr. Goodman attended the Committee, and explained that he had withdrawn in many cases his advertisement, and was prepared to withdraw it in all—this falsely assumed title,—and he wrote on the 6th of May the letter which I will now read to you.

"2, Ludgate Hill, E.C., *May 6th*, 1891.

"TO THE GENERAL MEDICAL COUNCIL.

"GENTLEMEN,—With reference to the question which you are considering with regard to myself, and the Dental Committee's Report thereon, I beg to set briefly before you the facts as summarized in my previous correspondence. The titles complained of were originally used by me because I had personally attended to members of the Royal Households. The request made by the Lord Chamberlain that I should discontinue doing so I did not comply with at the moment, for the reason that I felt justified in using the titles, the more particularly as Sir Thomas Chambers, the

Recorder of London, had on the facts expressed himself favourably to my view. But when Mr. Farrer wrote me on the subject I reconsidered the matter, and finally, out of deference to the wishes of your Council, took steps to withdraw the announcements. They were immediately stopped in all my newspaper advertisements, which is by far the most important means of publicity I employ, and my printers were instructed to discontinue them in all future circulars. These circulars, I may explain, go, in several instances direct from the printers to my distributors, consequently it is possible that in some insolated instances a few of the old circulars may have been in recent distribution, but if so it has been quite without my knowledge or consent. But I would also point out that though one of those old circulars may have been recently brought to your notice, that is no evidence that they have been recently circulated. They are now in the possession of strangers, who might produce them two or three years hence. With regard to the brass plate at No. 1, Ludgate Hill, the announcement objected to was for some time past covered up, and would have been replaced altogether but for the fact that I was removing to No. 2, Ludgate Hill, for which a new plate has been prepared. Though there may have been omissions or oversights on the part of those acting for me in the provinces in exceptional instances, I still venture to submit that the action I have taken evidences a *bona fide* desire to meet the wishes of your Council, and at the present moment I am convinced that all announcements open to criticism have been withdrawn. Furthermore I would point out that what I have done has not been done under pressure, as until the receipt of Mr. Farrer's letter in April, I was personally unaware that everything had not been withdrawn in my provincial branches. Otherwise it is hardly reasonable to assume that on March 21st last I should have written to Mr. Farrer pointing out that another dental firm was advertising a similar allusion to the Royal Households.

"I am, Gentlemen, your obedient servant, H. L. GOODMAN."

Have you anything to add to that letter?

Mr. GOODMAN: Well, Mr. President and gentlemen, I do not wish to waste your valuable time. If I did not instruct counsel to appear for me it was not out of any disrespect to your Council, but rather that after taking legal opinion I did not feel justified in continuing my course of proceeding, or my mind was not clear upon it. It is with every respect to you that I appear here. I believe it was Professor

Macnamara invited me to produce on the trial, which I presume you call this proceeding, evidence of the expression of opinion which certainly did justify me in using the title of "Dentist to the Household of the Queen," an expression which emanated from one of Her Majesty's Judges. I will hand it in, unless you wish me to read it. I say then, after being fortified with that expression of opinion from the learned Recorder of the City of London, I believe to the best of my ability I have honestly deferred to the wish of this Council. I do not think any one instance can be pointed out in which I have continued to advertise myself in the forms objected to since I have written to Mr Farrer. He certainly has not read all the correspondence; if he had done so I think it would have shown my anxiety to defer to the wish of the Council under the circumstances. It appears to me that your Council will not act arbitrarily in my case. As to the report itself, I do not see that the sub-committee have made any alteration since I placed myself before them, because they were kind enough to give me a copy of that report, which was prepared and handed to me before I appeared before them. I present myself here with great submission to your Council, and I do it from a motive for which, when all the circumstances are considered, I hope you will give me credit. This is a matter which affects my honour that my conduct should not be considered disgraceful. I am a dentist and always have been a dentist long before the passing of the Act, and till this day. I am thankful that I am before the Medical Council and not before the Dental Association, who certainly in my opinion, have persecuted me to the utmost. I can only repeat that I have some justification for my action—not a perfect justification, and short justification is contained in the expression of the learned Recorder. If you will permit me, I will read it very briefly. An action was brought by me on May 22nd, 1889, against the Commissioners and Corporation of London for compensation as being disturbed in my premises, in which I had a leasehold interest. In cross-examination by the learned Solicitor-General a question was put to me as to whether I had an appointment as dentist to Her Majesty the Queen and to H.R.H. the Prince of Wales. My answer was, "No, I have not, but I have attended the members of the Households of Her Majesty and the Prince of Wales, and the Duke of Cambridge." The learned Recorder said I was justified in using that expression, and in his summing up there are the important words : "Another great point in his favour is that he is able to say this, and here again I do not in the least blame him ; he is probably quite right, but certainly I do not blame him in the least. I give him credit for it ; he has had the opportunity of operating upon the members of the establishment of the Royal Family—that is a great advantage to anybody. The Commissioners are not going to take away that advantage. It will remain just as it is now. Before this case was brought he had to do with the Royal establishments of the Prince of Wales and the Queen, but all these are not advantages which will be removed from him." In response to the invitation of the Lord Chamberlain, I wrote him a reply and I stated why I had taken upon myself that title. I believe you have a copy of that letter. Another reason is, I believe he was instigated in writing to me to refrain from using the title by certain rival men. But I wish to point this out most emphatically to you that from the first communication I had from your Council, although Mr. Farrer, I do not suggest out of any unfairness, has not read it, I scarcely think he will charge me with treating you with discourtesy. But with submission I suggested that I was entitled to use this title. Whether you do or do not decide that I am not entitled to use it, I am prepared to give an undertaking that I never will use it again. It is withdrawn ; it is not in existence to-day, unless it may be brought to the knowledge of any one in a way that I believe it cannot be brought. I cannot undertake to destroy everything that ever existed, but I will give an undertaking that it shall not be used with my knowledge. Although there is not such an appointment as Dentist to the Household of the Queen, still there may be an appointment of Dentist to the Queen, and I have no desire for a moment to mislead any person into the belief that I hold that appointment, or to deprive any gentleman who has such an appointment.

The PRESIDENT : Do you withdraw any claim to use the title of Dentist to Her Majesty's Household ?

Mr. GOODMAN : I do.

The PRESIDENT : And you further promise that you will take every possible means to prevent any such statement being circulated by you ?

Mr. GOODMAN : I will, sir.

Sir DYCE DUCKWORTH: When did you begin to practise dentistry?

Mr. GOODMAN: I decline to answer. I submit to the gentlemen and President here that we should be confined to the strict issue of the matter contained upon this report. The report states I was registered as a dentist.

Sir DYCE DUCKWORTH: When did you begin to practise dentistry?

Mr. GOODMAN: I cannot tell you, sir.

Sir DYCE DUCKWORTH: When did you begin to practise dentistry?

Mr. GOODMAN: I am not prepared to answer. I was instructed in dentistry at the age of eight or nine. My uncle had been in practice for fifty years as a dentist. I have never been anything but a dentist. I cannot tell you the exact date when I commenced to practise, but I have been in the practice of dentistry since the passing of the Act and many years before the passing of the Act.

Sir DYCE DUCKWORTH: Have you any objection to tell us your age?

Mr. GOODMAN: I am thirty-eight.

Sir DYCE DUCKWORTH: And you ask this Council to believe that any judge sitting on the Bench suggested that you were entitled to a Royal appointment?

Mr. GOODMAN: I refer you to the Judge's statement. I say as a layman I think I am bound to respect the opinion of, I believe, one of the oldest of Her Majesty's Judges.

Sir DYCE DUCKWORTH: You believe that his opinion expressed from the Bench constituted an appointment.

Mr. GOODMAN: I did, sir.

Sir DYCE DUCKWORTH: Do you believe it still?

Mr. GOODMAN: No, I do not believe in it. You force me now. I do not believe it for the reason I discussed a minute or two ago.

Sir DYCE DUCKWORTH: Have other firms of dentists taken up this title of Surgeon to the Royal Household?

Mr. GOODMAN: After I communicated with Mr. Farrer and expressed my intention to withdraw it, I called attention to another firm who used it, which is all evidence of my intention to discontinue it.

Sir DYCE DUCKWORTH: Do you think the advertisement benefited your practice?

Mr. Goodman: No, I do not.

Sir Dyce Duckworth: You think you gain nothing by it?

Mr. Goodman: I do not think I gain anything by it.

Mr. MacAlister: Are you in any way connected with other firms which have taken up this title?

Mr. Goodman: No, I am not.

Mr. Farrer: Only one word of explanation. Every letter that has passed has been read to the Dental Committee, who are the people to find the facts. Mr. Goodman, it is only just to him to say, has behaved with perfect courtesy throughout, both to myself and the Council.

Strangers having withdrawn, the Council proceeded to deliberate on the case *in camerâ.*

Strangers having been re-admitted,

The President said: Mr. Goodman, the Council has taken a lenient view of your case, and they have decided not to remove your name from the Register, but they desire me to admonish you of the consequences of doing wrong, and which you faithfully promise you will not repeat. You pledge yourself in the presence of the Council that this shall not be repeated?

Mr. Goodman: I do, and may I say whilst I am indebted to you for the courtesy you have kindly shown me in this matter that I have not been actuated by any personal aim in making my submission to your Council. I say this——

The President: I do not think we need hear you any further.

Rev. Dr. Houghton: We have given our opinion. We cannot hear Mr. Goodman further.

The President: If you will allow me I will read the resolution which has been carried from the chair: "Resolved, that Henry Louis Goodman, having admitted that he had improperly used the title of Surgeon-Dentist to the Households of Her Majesty the Queen and His Royal Highness the Prince of Wales, and having undertaken that he will not continue this practice for the future, be admonished by the President in the name of the Council, but that his name be not removed from the Dentists' Register." You will not venture to forget the warning you have received.

Mr. Goodman: I think I ought to be permitted to say I do not think I shall desire Mr. Miller to continue my name on the Register. My object in mentioning it is to show that I was actuated out of respect to this Council. I say I do make my submission, but still——

At a later stage of the sitting of the Council it was "moved by Sir WALTER FOSTER, seconded by Mr. WHEELHOUSE, and agreed to:—That the following Resolution passed by the Executive Committee on November 24th, 1890, and by them reported to the General Council for consideration and adoption (see Minutes, Vol. XXVII., p. 239) be adopted:—'That the By-laws or Orders of the Council which relate to persons who have commenced their Professional Education or Apprenticeship prior to the passing of the Dentists Act, but have only completed it after the passing of that Act, and which By-laws or Orders dispense with the Certificates, Examinations and other conditions for Registration in the Dentists' Register, required under the general provisions of that Act, be hereby "revoked," so as to cease to have effect on and after July 22nd, 1891.'"

International Congress of Hygiene and Demography.

SECTION II.—BACTERIOLOGY. *Provisional Programme.*

Commencing Tuesday, August 11th, Introductory Address by the President, Sir Joseph Lister. Bart. Among the subjects discussed will be—"The Etiology of Malaria"; Paper, with lantern demonstration, by Prof. Laveran, Paris. "The Bacteriology of Asiatic Cholera." "The Bacteriology of Vaccine Lymph." "Bacterial Necrosis of the Liver." "On The Morphology of Actinomyces." "On Hæmorrhagic Infection." "On a New Pyogenic Micro-organism, Micromyces Hofmanni." Discussion on Immunity—Its Natural Occurrence and Artificial Production. Discussion on "Tuberculosis in Man and Animals" (conjointly with Section III). Disinfection.—"Experiments Relating to the Disinfecting Properties of Chemical Agents on the Living Body, with special reference to the Disinfecting Properties of the Blood." "An Account of Experiments bearing on Antiseptic Surgery." "Copper as a Disinfectant." "On Disinfectants and Methods of Examining them." The Bacteriological Examination of Air, Soil, and Water.—"The Hygienic Value of the Bacteriological Examination of Water." "The Hygienic Value of the Quantitative Estimation of Bacteria in Air." "On an Extensive Outbreak of Typhoid Fever in connection with Drinking Water." The Food and Air Passages in Relation to Infection.—"The Mouth as a Source of Infection"; Paper (with lantern demonstration) by Prof. Miller, Berlin. "The Bacteriology of Dental Caries;" Paper (with lantern demonstration) by H. Sewill, M.R.C.S., London. More Obscure Forms of Infective Disease.—"Psorospermosis." "Cancer as an Infective Disease." Fermentation.—"Some Fermentations excited by Specific Micro-organisms." "The Relation of certain Organisms to Fermentation of Urine."

REVIEW.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY FOR 1890' Atalanta, Georgia, Constitution Publishing Co.

THE student of Dental Journals must work through much weary matter, useless stuff—from the pens of gentlemen anxious to see their names in print, who take down the shutters before there is anything in the window—much consisting of fads and crazes and more or less imaginary accounts of wonderful methods, wonderful operations which are too often utterly unpractical and even impracticable.

The book under consideration winnows the chaff and collects together all which, to the author's mind, is worth reading, worth keeping, of a practical nature, in the periodical dental literature of 1890. The selection is made with care and judgment; consequently the book is eminently worth reading. The figures originally appearing with the various essays are plentifully introduced. It is impossible to criticize the matter contained because it is so varied. It is divided into sections, viz.:—operative dentistry, prosthetic dentistry (artificial work), crown and bridge work, orthodontia (regulation cases), dental medicine, oral surgery and miscellaneous.

Dentists who read their journals will do no harm by reading a recapitulation of good things. Those who do not read their journals should by all means read this book. Probably everyone will find in it much that is new to him. Our advice to all is, read it.

Legal News.

Prosecution of an Unregistered Dentist at Blackburn.

AT the Blackburn police court, on Friday, May 12th, Thomas Hawkins was summoned at the instance of the British Dental Association with unlawfully using the name and title of "surgeon dentist," implying that he was a person qualified to practise dentistry. The prosecution was undertaken by Mr. Jannion, barrister, of Manchester, and a local solicitor, named Mr. R. Riley, defended. The former, in opening the case, said the summons was taken out under the Dentists Act, 1878, and the defendant was liable to a fine of £20. In this case the information was laid by two private persons, and he asked for a penalty that would be a warning to others. The facts were briefly these:—In 1879, the defendant was registered under the act, but in November of last year, certain facts came to the knowledge of the General Medical Council, which led to his name being erased. The name of "Thomas Hawkins" did not appear in the Register of 1891, and to negative the clause in section 3, which applied to the medical profession, he (Mr. Jannion) would put in the Medical Register, which would show that the defendant was not a person to act as a medical practitioner. Charles Nuttall, dentist, of Rawtenstall, said he had known the defendant for over 18 years, and could say he now lived at 70, Audley Range, Blackburn. Witness had frequently passed the door, and had noticed a sign there "Hawkins, surgeon dentist." In cross examination by Mr. Riley, witness said he had been a dentist since 1885. The defendant had been in his employ from time to time as collector and canvasser since 1885. Witness himself visited something like 50 towns, and had three places with signs outside, namely, Hull, Haslingden and Whitworth, near Bacup. He had a place in Brown Street, Blackburn, but his son looked after that. He had provided the information for that prosecution. Samuel Taylor McDober proved having seen the sign over defendant's door, and to his having a practice there. For the defence, Mr. Riley said he was not for one moment going to suggest that Mr. Hawkins was on the dentists' register. He had anticipated that evidence would be given that the defendant had, since having his name taken off the register, been in extensive practice. That was so, and the gentlemen who had been called for the prosecution had not alleged that Mr. Hawkins was incompetent. The defendant was not going to deny that for some little time after November he kept his sign up, but he afterwards wrote to the British Dental Association expressing his regret for having done so. The magistrates, after a brief consultation, said defendant would be fined 20/- and costs.

ARE ARTIFICIAL TEETH "NECESSARY"?—William Wade, only registered dentist, Rhodes Street, for whom Mr. C. T. Rhodes appeared, claimed £2 11s. from John Scott, mechanic, Ellenroyde Terrace, Haley Hill, Halifax. Defendant was represented by Mr. E. Booth. Plaintiff's case was that in June, 1889, defendant's wife was supplied with a set of artificial teeth—22 teeth there were, to be precise—for £4 8s., being at the rate of 4s. per tooth. Mrs. Scott had paid several instalments, first £1, and then several smaller sums; and one payment of 3s. was made by the husband, thereby confirming the contract, even supposing he did not know of it originally. Difficulty in the hearing of the case was occasioned by the plaintiff not having brought his book into court. He admitted, however, that the account in the book would probably stand in the name of Mrs. Scott. Mr. Rhodes submitted that this would not matter, seeing his Honour had previously held against the same man that a perambulator and a sewing machine were "necessaries" within the meaning of the law, and that the husband was liable to pay for them, even though he was unaware that they had been bought by his wife and not paid for: surely teeth were necessary, otherwise nature would not have provided us with them. In the case of Jolly *v.* Rees, although it was decided that where a husband had expressly ordered his wife not to pledge his credit, the same case decided that, where a wife is living with her husband, the presumption is that she has his authority to pledge his credit for all articles that are suitable to that station which he permits her to assume. The teeth were not expensive teeth, though of good workmanship. Robert Brearley, who at one time was assistant to the plaintiff, proved receiving from the defendant 3s. towards payment of the account, after he knew the account was not paid, and before the wife's death. Mr. Booth, in defence, commented on the unwisdom of dentists supplying working men's wives with luxuries to this extent, on trust. The defendant's wife had since died, and the defendant had no means of ascertaining whether the amount now claimed was correct or not. What he knew was that he gave his wife ample to live upon, and when she got the teeth in question he gave her money to make up the sum they were to cost, and he had no notion that they were not paid for until a youth called about the matter, and paid 3s. on account. This was before the wife's death. His Honour said the real point to decide was, "Are the teeth necessary?" Mr. Rhodes and Mr. Booth immediately held—one that they were, and the other that they were not. His Honour held that this kind of what he called indiscriminate trusting of people was very unsatisfactory, and he ultimately non-suited plaintiff. Mr. Rhodes: Well, your Honour, I never hope to win a case if I cannot win this, even on the weight and quality of the evidence alone.

THE DENTAL RECORD, LONDON: JULY 1, 1891.

MASSAGE IN DENTAL DISEASES.

It is sometimes said that dentists narrow down the *armamentarium therapeuticum* into too strait a compass, but the fact that massage is now recommended and successfully employed in the treatment of local diseases of the mouth must prove that we are at least willing to profit by the experience of our medical confrères and adopt where we see fit their modes of cure and apply them to the province over which we hold sway. Dr. Rehfuss, who has made this subject his own, has shown how extremely valuable massage when properly understood and practised may prove in dental lesions. Unfortunately the popular view of massage is that it means rubbing, only rub severely enough to make yourself unpleasant and render the bare thought of a repetition of the treatment intolerable, in short, terrorise your patient into shamming "feeling very much better now," and you fulfil the popular view of massage. A little more attention paid to the matter very soon dispels this view and reveals the fact that massage to be successful must be performed by an expert with a special knowledge of a special series of muscular movements, aiming at a physiological result only attainable by strict attention to rule and careful observation of the anatomical peculiarities of the part to be massaged. The physiological effects of massage may be briefly put as follows. The tissues are braced and invigorated, circulation through them is stimulated, and as this applies to the lymphatic vessels as well as the blood channels, there will be an increased tissue exchange and heightened absorption of the products of tissue change, debris, etc. Alternating pressure, as exercised in deliberate squeezing of the tissues, cannot fail to promote onward rush of blood while it assists the venous flow, and massage, as Dr. Rehfuss points out, acts therapeutically very much in the way as heat or cold do when locally applied. For the intermittent momentary compression produces at each application mechanically a contraction and dilatation of the blood vessels, and this we are told leads to variations in caloric. An additional advantage of this method of applying heat is that you are able to obtain alternations far more rapidly—60 a minute or so—than is feasible with the ordinary local calorifacients. The local effect of cold as applied to inflamed areas, is, of course, to lessen the blood supply by inducing stasis and so relieving the part of its engorgement. This has, of course, a deleterious result inasmuch as a temporary vasomotor paralysis is liable to result in a still greater engorgement as soon as the refrigerating agent is withdrawn. Again, as there is stasis established, the products of tissue changes are kept incarcerated in the inflamed area, whereas when massage is employed the compression while it empties the engorged tissues promotes the onward flow of the blood, and so actively depletes while it washes into adjoining districts the effete material, where it is disposed of. We are assured that massage of the gums even when they are acutely inflamed is not as one might imagine painful, but is rather grateful to the patient. That this desirable consummation is to be attained we must be sure of skilled massage being applied, slow continuous grasping pressure at first, increasing the rapidity of the squeezes and alternations as the tissues begin to lend themselves to the fingers of the operator. We shall return to this subject in a later communication and point out what classes of cases derive most benefit from this line of treatment.

WE are pleased to hear of Dr. GADDES having attained fresh laurels in the land of his adoption, and offer him our hearty congratulations. Dr. Gaddes has been appointed Lecturer upon Dental Histology and Microscopy, and Dean of the Faculty of the Dental Department of the University of Denver, Colorado.

Mr. MORTON SMALE has been appointed Dental Surgeon to St. Mary's Hospital.

Royal College of Surgeons of England.

THE following gentlemen, having passed the necessary examination, were, at an Ordinary Meeting of the Council on the 11th ultimo, admitted Licentiates in Dental Surgery.

Name.	Hospital.	Residence.
Allin, Charles James.........	Char. + & Dental	11, College Street, St. Albans.
Badcock, Chris. Frampton	Char. + & Dental	108, Tottenham Court Road, W.
Birkett, William	Manchester	16, Crescent, Morecambe, Lancs.
Blaaberg, Charles Jens ...	Middlx. & Dental	2, Argyle Square, King's Cross.
Breese, Frederick	Char. + & Dental	3, Hillside, Crouch Hill, N.
Coysh, Thomas Arthur ...	Char. + & Dental	47, Bramah Road, Brixton.
Forsyth, Harry Arthur ...	Char. + & Dental	54, Claverton Street, S.W.
Gask, Arthur Cecil	Middlx. & Dental	53, Fairholme Rd., W.K'nsingt'n
Harrison, Richard Malcolm Crowther	Middlx. & Dental	245, Camden Road, N.
Haynes, Frederick	Guy's	2, Orkney Terrace, Southsea.
Headridge, David............	Manchester	279, Oxford Road, Manchester.
Hopson, Montagu Frank...	Guy's	65, Northbrook St., Newbury.
Jones, David Richard	Char. + & Dental	33, Mansel St., Swansea, S. Wales.
Longhurst, Percy Augustus	Char. + & Dental	The Woodlands, Barnes Com'on
Stocken, Leslie Maury, M.R.C.S., 1st Aug., 1889	Univ.Coll.&Dentl.	Winchester House, Uxbridge Road, Ealing, W.
Walker, Frederick Vincent	Manchester	26, Hall Gate, Doncaster.
Welham, George William..	Char. + & Dental	365, Brixton Road, S.W.

17 *Candidates were referred back to their professional studies.*

Selections.

From the Proceedings of the Royal Society.

"Some points in the Structure and Development of Dentine." By J. HOWARD MUMMERY. Communicated by C. S. TOMES, F.R.S. Received February 7, 1891.

(Abstract.)

THE purpose of the present paper is to show that there are appearances in dentine which suggest that it is formed by a connective tissue calcification, and that the process is more closely analogous to the formation of bone than has usually been supposed.

The varied theories held as to the structure and development of dentine are partly due to the difficulties met with in the investigation of this tissue, soft and hard parts having to be retained in their natural relations to each other. Decalcification of the dentine by acids has been resorted to, a mode of preparing microscopical objects for study which is open to many objections. Sections cut by a process recommended by Dr. L. A. Weil, of Munich, exhibit the natural relations of pulp and tooth without the necessity of resorting to decalcification. Fresh specimens are fixed in sublimate, passed through gradually increasing strengths of spirit to absolute alcohol, and slowly impregnated with a solution of desiccated balsam in chloroform, dried with more balsam over a water bath, and cut down on a stone with water. The present investigation was undertaken with the aid of this process controlled by the examination of other specimens cut by the more ordinary methods.

Processes or bundles of fibres are seen, incorporated on the one side with the dentine, and on the other with the connective tissue stroma of the pulp ; some of the bundles give evidence of partial calcification, reminding one of similar appearances in the calcification of membrane bone. Cells are seen included in the bundles and lying parallel to their course ; these cells, it is concluded, form together with the odontoblasts the formative cells of the dentine, the calcification of which tissue should be looked upon as in part, at least, a secretion rather than a conversion process, the cells secreting a material which calcifies along the lines of and among the connective tissue fibres, the cells themselves not being converted into dentine matrix. These appearances are seen in the rapidly forming dentine of a growing tooth, as well as in more fully developed specimens. An examination of other Mammalian teeth reveals similar appearances. The dentine of the incisor of the Rat (*Mus decumanus*) shows with great distinctness the incorporation of the connective tissue fibres with the dentine, and there is a marked striation of the dentine near the pulp cavity, parellel with these fibres. The ivory of the elephant's tusk shows the same relation of connective tissue to formed dentine. Vaso-dentine exhibits a very well defined connective tissue layer surrounding the pulp. This layer has hitherto been looked upon as consisting of odontoblasts, but this tissue shows no nuclei, and has the character of a layer of flattened connective tissue fibres—a layer of nucleated cells in close apposition to the dentine, probably being the real odontoblasts of vaso-dentine.

PATHOLOGICAL CONDITIONS OF THE ETHMOID BONE RESULTING FROM DENTAL LESION.

By I. P. Wilson, D.D.S., Burlington, Iowa.

In considering the subject of this paper it seems necessary first to examine, to some extent, the peculiar location of this marvellous structure of bone—its anatomical formation, and the relations it sustains to the surrounding tissues.

It is held in position by more than a dozen bones of the face and cranium, which so hedge it in on all sides that it cannot be examined minutely except when disarticulated.

When isolated from its associates we find its measurements to be about 1¾ inches in length, 1½ inches in depth, and 1¼ inches in thickness, making it of a somewhat cubical form. The constituent parts of this bone consist of a horizontal and a perpendicular plate, and to the lateral borders of the former are attached two spongy masses of bone composed entirely of cells, some of which communicate with each other, while all open either directly or indirectly into the nasal fossæ.

The horizontal or cribriform plate as it is called, occupies the space, or fills the " notch " between the orbital plates of the frontal bone, thereby forming a part of the walls of the cranial cavity.

Rising from the median line of the superior surface of this plate is a firm, triangular-shaped crest of bone resembling in shape a cock's comb, hence its name, " crista galli."

From the inferior surface and continuous with the " crista galli," descends the perpendicular plate which forms a part of the septum of the nose.

The " lateral masses " of the ethmoid as stated above, are attached to the outer margins of the horizontal plate, and drop down for an inch and a half on either side of the septum of the nose. These two " masses " contain more than a score of air-cells surrounded by bony walls no thicker than the paper upon which I am writing.

The ethmoid when separated from the frontal bone is found to contain several open cells in front, the remaining portions of which are found in the orbital plates of the frontal, and open directly into the frontal sinuses.

Behind are also found open cells which communicate directly with two large cavities in the body of the sphenoid bone.

But the greatest air-cavity of all is the Antrum of Highmore, and this is also found to be associated with the ethmoid bone.

From the anterior part of each lateral mass the unciform process reaches down to the orifice of the antrum, and assists in narrowing this outlet. It is also connected with the inferior turbinated, and with the thin walls of the antrum.

The middle and superior turbinated are processes of, and belong to the ethmoid, and as the name indicates, each is rolled upon itself. They are attached to the inner surface of each lateral mass—pass outward, downward and inward forming a curved plate of thin bone measuring almost two inches in length, and about one inch in width.

If we make a complete exploration of the nasal fossæ we find the ethmoid bone occupying a large portion of the cavernous passage.

It forms a part of the walls of the cranial cavity, of the orbit and of the nares. The air we breathe should, and usually does, pass between its convoluted walls.

All the air cavities and passages are, of course, lined on both sides with one continuous layer of mucous membrane which is highly vascular, and almost trebles the thickness of those paper-like walls and plates.

When this mucous membrane is in a normal condition with warm blood rushing through its vascular walls, it acts as a radiator in warming, and as a filter in purifying the air in its passage to the lungs.

This remarkably fragile frame-work of bone contains the organ of smell.

The cribriform plate (so called from its sieve-like appearance) supports the olfactory lobes of the brain. From the under part of these lobes or bulbs are given off a score or more of nerve filaments which pass through the foramina in the cribriform plate, and are distributed in the mucous membrane of the septum, the roof of the nose, the superior and middle turbinated, and then extend forward upon the spongy walls, so that a complete network of olfactory filaments ramify the mucous membrane that encloses the fragile structure of the ethmoid.

Having thus briefly refreshed our memories regarding the anatomical structure—the office, and the environments of this cellular texture of bone, we are prepared to consider the dangers to which it is exposed from dental lesion.

Garretson says that "maxillary diseases find an easy road to the base of the cranium through the nasal communication with the ethmoidal cells."[*]

That the maxillary diseases referred to usually arise from diseased teeth will scarcely be questioned. This one short sentence is all I have been able to find in several medical and dental works I have examined, having the least reference to the pathological conditions of the ethmoid, as resulting from diseased teeth. I shall, therefore, be obliged to consider the subject of this paper entirely from the stand-point of personal observation of cases in practice, two or three of which I will now relate.

During mid-summer of last year I was constructing a partial upper set of teeth for Mrs. B., 50 years of age, who had always enjoyed excellent health until a few years before, when she suffered from a severe attack of congestion of the liver resulting in an abscess of that organ, which has ever since discharged periodically, through her lungs.

While fitting the plate to her mouth I discovered a slight discoloration of the second upper molar on the right side. The tooth had been filled, and seemed to be in a perfect state of preservation. On percussion, however, I found it slightly sensitive, but there were no external indications of an abscess.

The tooth had been filled many years before, and she believed had never given her any trouble. The filling was small, so I conclude that the pulp had not been destroyed by the operator, but had subsequently perished from some other cause. I then inquired of the lady if she was troubled with nasal catarrh, to which she replied, "Oh yes, greatly for some years past." On further inquiry I found that she had suffered much of the time from heavy pain in the right cheek, watering of both eyes, especially the right, and an abnormal discharge from both nostrils which was somewhat increased by lying on the left side. She also complained of a distressing pain under the "bridge of the nose" or between the eyes. She had lost her relish for food because of the nauseating effect of the catarrhal discharge which seemed to take place posteriorly into the pharynx as well as anteriorly; the sense of smell was impaired, and her breath had become exceedingly offensive. I could not well be mistaken in my diagnosis. Disease of the maxillary sinus involving the spongy bones of the ethmoid was clearly indicated by the symptoms.

My patient being advised of her condition consented to the extraction of the discolored molar as the first step in the course of treatment to be pursued.

As anticipated, the pulp was found to be dead.

The apical portion of one of the roots was "absorbed," with a circumscribed line encircling the foramen.

This line marked the union of the peridental membrane with the soft tissues surrounding an opening into the antrum which was the outlet for the gases and putrescent matter that were being generated and thrown off from the dead pulp. After greatly enlarging this opening, a bulb-syringe was employed for injecting warm water into the antrum, which forced a mass of corruption through both sides of the nose. By placing her head well to the left while washing the antrum it was found that the greater discharge was from the left side. This indicated that the bony wall of the septum had been broken down, or was at least perforated. The loss of the sense of smell indicated that the olfactory filaments distributed in the mucous membrane covering the spongy bones were either destroyed, or their sensibility blunted.

As the liquids used in cleansing the antrum passed so freely into the nose I concluded that the ostium between those cavities must be greatly enlarged, and perhaps the bony wall partially broken down.

The antrum was syringed at first, daily, with antiseptic washes. A month later the diseased condition of the cavity was found to be rapidly giving way, but the distressing feeling between the eyes still continued, though greatly diminished. Believing that the disease was now almost entirely confined to the spongy bones of the ethmoid, and there being no rhinologist in the town with whom to consult I called Dr. Young, a skilful oculist and aurist, to my assistance.

After each cleansing operation with liquids the nasal passages were anointed by Dr. Young as thoroughly as possible with vaseline, containing about one per cent. of eucalyptus.

In a few months the discharge subsided and her health, which had rapidly been giving way, began to improve, and at the present time the diseased parts seem to be restored to perfect health, but evidently not without loss of considerable ethmoidal tissue. As evidence of this the voice is somewhat changed, having something of a hollow or muffled sound.

Most of us have noticed that persons who are suffering from chronic catarrh in the head have the modulations of their voice thus impaired ; so with one who is quite dull of hearing, we have only to hear him speak to know of his infirmity.

I have quite a number of cases in practice, some less and some more aggravated than the one I have related above, and it was my purpose on commencing this paper to report them at this time, but they are so similar in character that I have concluded it quite unnecessary to do so.

In some cases the disease had evidently extended to the frontal sinuses, and although the ulceration of the antrum gave way, the catarrhal discharge continued, though in a very much abated form. The pain and distress, as well as the abnormal discharge from the antrum, ceased, while between the eyes and above the "bridge of the nose," it continued.

But little, if any, light has been thrown upon pathological conditions of the ethmoid, either from vivisection or from post-mortem examinations. The structure occupies a position too near the citadel of life for the former, and for obvious reasons is rarely if ever resorted to in the latter, although the spongy bones could readily be reached, without disfiguration, by the removal of the cribiform plate, gaining access through the cranial cavity ; but I have never known of such an examination being made.

A very accurate knowledge, however, of diseased conditions of this bone may be ascertained without such examination, the symptoms above given being unmistakable in their character.

As an interesting incidental fact, I may state here that the discovery has been made, by the examination of mummies, that the ethmoid bone was always removed by the ancients before embalming their dead.

This was done in order to remove the brain without disfiguration, afterward filling the cranial cavity with embalming drugs, showing the intimate relationship of this bone to the brain.

I do not pretend to say that dental lesion is the usual cause of pathological conditions of the ethmoid, but I have no doubt as to its sometimes being a factor, and at other times the sole cause of the disease, and that, too, in some of the most aggravated cases. I can recall at least a dozen cases in practice where nasal catarrh had been unsuccessfully treated for years when suppuration of the maxillary sinus, resulting from diseased molars containing dead pulps, was found to be the cause of the malady.

The statement by some writers that suppuration of the antrum is the result of rhinitis would come much nearer the truth if reversed.

If the maxillary sinus is diseased and there is a purulent discharge into the nose from that cavity the septic matter thus thrown upon the mucous membrane will irritate, and sooner or later cause ulceration of the surface over which it flows.

The extension of the disease, then, from one anatomical part to another is not so much from continuity of tissue as it is from actual contact with virulent matter thrown upon normal tissue in its way of escape from the seat of the disease.

There can be no doubt that diseases of the nose may in various ways close up the natural opening from the antrum into the nasal cavity, thereby causing engorgement of the sinus, and a diseased condition of that cavity follows as the result. But such cases are exceedingly rare as compared with those that have their origin in diseased teeth.

At least 90 per cent. of the cases met with in my practice were traced directly to the roots of diseased molars, and in those cases the disease had passed from the teeth to the antrum and from the antrum to the nose, involving in some cases the spongy bones of the ethmoid.

On the other hand, a purulent discharge from the nose cannot reach the mucous membrane of the antrum, while suppurative matter from the antrum is voided into the nares and must have its vitiating influence upon the mucous membrane of that cavity. Nor is the poisonous effect of the discharge imparted to the anterior part of the nares alone. Different positions of the body during sleeping hours expose the "lateral masses" and the posterior nares as well to the acrid matter.

It is not strange that the paper-like walls of the ethmoid should be liable to destruction from chronic ulceration of their mucous membrane, as the periosteum is so directly exposed to the ulcerative process. And when this loss of tissue takes place the sense of smell must, to a great extent, go with it.

The destruction of the osseous tissue doubtless usually takes place from caries and not from necrosis, except where the mucous membrane and periosteum of both sides of the fragile walls are destroyed, near or at the same time.

The treatment of pathological conditions of the ethmoid is not an easy matter. The inaccessibility of the parts makes it exceedingly difficult to apply effectually the cleansing agents so necessary for successful treatment.

In all cases of nasal catarrh it is well to examine with care the condition of the teeth, and if pulpless molars are discovered, the condition of the antrum should receive careful attention, and if an abnormal condition is found to exist here, the symptoms in the case point with almost unerring certainty to the diseased teeth and the antrum as the original cause of the nasal malady. The treatment of the case then, should commence with the teeth and the antrum. But removing the cause does not usually remove promptly the effect that has been produced.

The extension of the disease will require extension of the treatment, and nature, the greatest physician, will usually do her part of the work in effecting a complete cure.

Wisely the spongy bones of the ethmoid are so arranged that gravitation aids greatly in draining away the acrid matter. Antiseptic lotions should be used daily, after which the parts should be anointed, as well as can be with vaseline containing about one per cent. of eucalyptus. This is to avoid the scalding effect of the catarrhal discharge upon the mucous membrane over which it flows.

I am more impressed with the importance of the subject under consideration when I remember that at least a half-score of such cases have come under my treatment during the last two decades, and in all of those cases the general health was rapidly failing, and with some life had become a wearisome burden,

On dismissing one of those cases a few years ago, I requested the lady to write me in six months and state her condition at that time.

Promptly at the time named the letter came containing the following statements: "When I visited you six months ago, I was a wreck. I had given up my household duties, and instead of being a blessing to my family I could but feel that I was a burden. My breath was so offensive that I was compelled to isolate myself, as much as possible, from my family. A gloom settled down upon me, and I felt, as did my friends, that my days were numbered. Now I do all my household work, and enjoy excellent health, and feel that I am once more a blessing to my family."

If I have succeeded in this paper in calling the attention of both the medical and dental professions to one of the causes of pathological conditions of the ethmoid, known as "nasal catarrh," and in doing so have been able to throw some light upon a hitherto neglected view of the subject, I shall feel that my effort has not been in vain. —*Dental Review.*

Journalistic Memorabilia.

OBTUNDING SENSITIVE DENTINE.—Dr. H. S. Lowry writing in *Archives of Dentistry*, says: "The most effectual means of obtunding sensitive dentine that I know of is the following: Incorporate with phosphoric acid an equal amount of "Robinson's Remedy," by rubbing the two together on a porcelain or glass slab with a spatula, then add oxide of zinc, sufficient to make a stiff paste; while in this consistency, place it in a thoroughly desiccated cavity of a tooth too sensitive to excavate, and allow it to remain a few days or two weeks if convenient. The fact of adding the "Robinson's Remedy" interferes with crystallization somewhat, but the cement compound becomes sufficiently hard for its intended use. This treatment has invariably enabled me to operate with ease upon teeth that otherwise could scarcely be touched without inflicting the severest pain.

ARISTOL, A NEW ANTISEPTIC.—Dr. J. V. Kejzlar, of Jiciu, in the *Austro-Hungarian Dental Quarterly*, says: "Some time since, my attention was drawn to a new, powerful antiseptic, the thymol derivative called Aristol, discovered by Drs. Messinger and Vortmann, of Aachen. It is the best substitute for iodoform, which, on account of its disgusting odour, is especially abhorred by patients who have disorders of the mouth or teeth. Aristol has no disagreeable odour and is easily endured by sensitive patients. It has no toxic properties like iodoform, does not irritate, adheres very readily to loose-lying pulps, and has excellent healing properties. I tried it in all cases of most varied tooth complaints, in which the hitherto available antiseptics had been used, such as gangrenous pulps, antiseptic for the root canals, disinfection of carious cavities, before introducing the filling, and so on. On gangrenous pulps, I strewed Aristol in powder with a fine brush ; for disinfecting the root canals and carious cavities, I used a ten per cent. solution of Aristol in sulphuric ether ; through the rapid evaporation of the ether, the Aristol forms an even coating and rapidly dries the cavity. For fistulous spaces, I use small rods made of ten parts cocoa butter and one part Aristol, by which granulation and healing proceed rapidly. Aristol is insoluble in water, but readily soluble in sulphuric ether, collodium and fatty substances. It is generally used in a ten per cent. solution or directly in the powdered form, externally for wounds, all kinds of swellings, for eruptions, syphilis, ozæna, ottorhœa nasopharyngeal syphilis, in gynæcology, and wherever antiseptics are indicated for external use.

A Method of Extracting Lower Third Molars.—Dr. J. W. Holt writing in the *Dental Cosmos* says : "In many cases of lower third molars requiring extraction, it is found hardly possible to apply the forceps in the usual direct manner,the teeth being either too much decayed or insufficiently exposed. A method of extraction that appears, at first, decidedly unscientific, but that has proved notably successful in many difficult cases, is to give the tooth first a start upward and backward, by closing the beaks of a 'cow-horn' forceps together between the second and third molars. Such a starting force should, of course, be cautiously though firmly applied. The lifting or pulling force, as in the ordinary use of extracting forceps, should be avoided. Simply to close the forceps between the second and third molars, while the former is reinforced with the pressure of the thumb, is sufficient, ordinarily, to start the third molar well from its socket, after which it can be easily taken away with any suitable forceps. As the tapered beaks of the cow-horn forceps forced between the teeth act as wedges, the force exerted may be very great, hence the necessity for caution. Injury to the second molar is the accident that would generally be most feared from this method, but a study of the relative length, size, and curvature of the roots of the teeth involved, and of the direction of the force applied, discovers a good margin of safety. The force applied to the third molar is upward and backward, nearly on the curvature of its axis and in the direction of its least resistance. The force applied to the second molar is upward and forward, almost across its axis, and not very far out of the line of its greatest resistance. Add to this the difference in size, length, and strength of the roots of the two teeth, and the bracing of the second molar by the teeth anterior to it, which, in case of a gap, can be made good by a mass of gutta-percha applied soft and permitted to harden, and it will be seen that there is at most very little danger of starting the wrong tooth. There is always in extraction of teeth the possibility of injuring the bone, and there is no better way to avoid that with any method than by a constant exercise of a discriminating knowledge of the strength of the parts and of the force applied."

["In the practice of the suggested method there would seem to be some risk of inadvertent fracture by reason of the powerful wedging action of the cow-horns if care were not taken to gently compress the forceps handles. If such excessive wedging action did not produce fracture, it might in some cases tend to lift from their sockets both the second and third molars. Observing due precautions, however, Dr. Holt's method utilizes the cow-horn forceps as occasional substitutes for the well-known Physick's forceps, which act on similar principles, but are not usually, as they ought to be, comprised in the extracting sets of dentists."—EDITOR *Dental Cosmos*.]

DR. W. J PAYSON, IN THE SAME JOURNAL, OFFERS FOUR SUGGESTIONS.

SECURING BITES.—Have at hand some half inch brads, and when the wax models for an upper and lower bite are adjusted in the mouth, take a brad with the foil-pliers,, hold it an instant in the lamp-flame, and place it across the two models on one side. The warm brad will melt its way into the wax. and the touch of a cold wet pledget of cotton will firmly unite the models on that side. Repeating the process on the other side, and also placing a brad on the median line will so secure the bite that the models may be removed without risk of separation or displacement,

IMPRESSION-TRAY EXTENSION.—Take a strip of thin sheet lead or tin and shape it to fit the rear floor and come around on the sides of the tray, flaring backward and standing as high as desired, Drill holes through the strip and tray, and sew them together. The plaster will thus be prevented from overflow into the fauces. By simply cutting the threads the tray may be restored to its original form and be ready for another like modification to meet any peculiar case.

Dr. ROBERTS, writing in *American Journal of Dental Science*, says "Tannic acid administered internally in proper doses, will stop, I believe, any case of hæmorrhage caused by tooth extraction, in from thirty minutes' to one and one-half hours' time. The manner and results of administering this very simple remedy I will illustrate by one case in practice.

"I was called, March 25, 1885, at 8 P.M., to check hæmorrhage from the lower gum of a lady, caused by the removal of eight badly-decayed and broken-down teeth. They were removed while patient was under nitrous oxide gas, with no more laceration of the gums than generally occurs. Patient did not bleed very profusely at the time but as she had a hæmorrhagic diathesis I kept her till the bleeding had entirely ceased. About 7 P.M. her husband came to me with the information that his wife was bleeding to death. I immediately went to their residence and found the patient in a bad state indeed. Pulse was very weak, and she looked about ready to expire, but there was life, and, upon enquiry, I found that she had expectorated nearly one quart of blood. Upon examination I found blood oozing from all parts of the gum. I immediately placed three grains of tannic acid in one-third glass of water and gave her two teaspoonfuls every five minutes until she had taken three doses, then two teaspoonfuls every fifteen minutes; after the second dose the flow had diminished to such an extent that I left them with instructions to administer the same amount every half-hour, which they did, and were only obliged to give two doses before it ceased entirely, with no return.

"I have used tannic acid for the last five years, whenever occasion presented, with the same good results, in fact it has never failed me."

APPOINTMENTS.

THOMAS GADDES, M.D., L.D.S. Eng. and Edin., has been appointed Lecturer on Dental Histology and Microscopy in, and Dean of the Faculty of the Dental Department of the University of Denver, Colorado.

J. PERCY OLIVER, L.D.S. Eng., has been appointed House-Surgeon to the Dental Hospital of London.

MORTON SMALE, M.R.C.S., L.S.A., L.D.S., has been appointed Dental Surgeon to St. Mary's Hospital.

THE DENTAL RECORD.

VOL. XI. AUGUST 1ST, 1891. No. 8.

Original Communications.

NOTES ON THE ANATOMY, PHYSIOLOGY AND PATHOLOGICAL SIGNIFICANCE OF PAIN AND OTHER NERVOUS PHENOMENA IN RELATION TO DENTAL DISEASE.*

BY THOMAS GADDES, M.D., L.D.S., Eng. and Edin. Lecturer on Dental Histology and Microscopy in, and Dean of the Dental Faculty of the University of Denver, Colorada.

IT may be said without fear of controversy that no one of the sciences upon which medicine is founded has advanced more within recent years than physiology has done. And perhaps the physiology of the nervous system, considering its supreme complexity and the difficulties attending its pursuit, stands out not the least prominent with its luminous strata unearthed by recent discovery. Of the greatest importance to the practice of medicine and surgery, is a knowledge of blood pressure in the systemic vessels as controlled through the influence of the vaso-motor nerves upon the small arteries and veins. And the latest induction in this relation is the existence of a similar vaso-motor and controlling function presiding over the pulmonary system of blood vessels. Almost incalculable also is the value of the physiological data spoken of as cerebral localization—that is the knowledge of the definite situations upon the surface or gray matter of the cerebrum which are the nerve centres controlling, through the mind, certain muscles and groups of muscles, as those of speech, of facial expression, of the arm, the leg, &c. How those centres, like electric batteries, are connected with one another ; that they have a certain resistance to discharge ; that their stored up energy may be caused to overflow to other centres or cells ; that those centres situate high up in the brain are connected with

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*A paper read at the June meeting of the Colorado State Dental Association, and by the courtesy of the Editor of the *Dental Review* sent as an advanced proof to the *Dental Record*.

others at lower levels and less associated with psychical influence; that the higher centres can be inhibited, restrained or switched out of connection with one another and with lower centres, and so on. Consequent upon those increments to knowledge, many of the explanations of perverted or diseased action have to be remodelled, not upon the old lines simply, but, in many instances, upon a totally different foundation.

This information necessarily relates to the dentist as well as to the surgeon and the practitioner of medicine; each having the science of physiology for a partial, yet most important, basis of his sphere of action.

Let me preface what follows with these anatomical facts relating to nerve tissues:—

A nerve fibril between its peripheral and its central terminations is not branched, nor does it communicate.

The fibres forming several nerve trunks may be rearranged, as in a plexus, but the individual and ultimate fibrils of an axis cylinder do not branch. Any branching that may take place is probably limited to their peripheral and central endings.

The question may arise in the intelligence of some one as to how there can be an anatomy of pain as set forth in the title to this paper. It will be well, therefore, to clear up any such possible uncertainty.

Pain is not a simple, but a compound nervous phenomenon, Pain is a condition of the feelings, and therefore, of consciousness. It is subjective. Its cause may be objective—as an exposed pulp, the extraction of a tooth; or the cause may be subjective, as in hysteria, the hypnotic and the ideal states. It is affirmed, and truly so, that the phenomena of pleasure and pain are perhaps the most obscure and involved which psychology includes. Notwithstanding that the structural units out of which pleasure and pain are built, admit of being studied in their individualities and in their aggregations; and also in their simple relations and in their complex relations.

According to Fechner's psycho-physical law, sensations increase proportionately to the logarithms of the strength of the stimulus, and as we speak of the pulse wave as traced by the sphygmograph in terms of motion, we can also set forth the different aspects of feeling in terms of matter and motion. The following sketch diagramatically presents an incomplete analysis of feeling and the equivalents expressed in physical terms :

- Feeling varies
  - According to cause, which may be
    - repeated—number.
    - different—quantity.
    - varied in degree—quality.
  - According to course of impulse, which may be
    - peripheral
      - thro' one fibril.
      - thro' several fibrils.
    - centripetal
      - from one centre.
      - from higher planes of centres—diffused.
  - In character, as in its
    - intensity—amplitude.
    - duration—time.
    - frequency of recurrence—time.

All nerve stimuli are motions, so too are all nerve impulses. Those rapidly recurring and exceedingly delicate nerve shocks ; those pulses of molecular change which are made through the nerve substance of a sentient centre are regarded as the units of feeling or consciousness. A simple feeling or sensation is composed of units of feeling. A shock or pulse (which eventually produces a unit of feeling) being repeatedly caused, being differently caused, and having varying degrees of causation, and reaching the centre by different routes, and by acting upon other centres, thus, it is asserted, gives rise to combinations of simple feelings, and these again are further compounded, ascending to higher and yet higher strata of nerve cells with the result of there being produced feelings of extreme complexity and heterogeneity both in structure and in relation. G. H. Lewes asserts that sensibility increases according to the extent of the ganglia affected.

Let us ascertain what light can be thrown upon the question by analogy. A given flute note has certain physiological qualities known as pitch, intensity and timbre. A note of a clarionet may differ in each of those qualities. The two physiological sounds are represented by physical (aërial) vibrations of essentially different yet corresponding properties. The pitch has its wave length ; the intensity its amplitude ; the timbre its secondary harmonic components or overtones. Each physiological effect is represented by vibrations of definite form and structure. The musical sound is the result of the combination of these structures. There is thus an anatomy of sound. Or, again, in listening to a well-trained choir we hear the several parts in harmonic relations ; each part having its own melody, *crescendo*, *diminuendo*, rests and other variations.

Those components have certain effects upon the mind as they are perceived through the auditory apparatus. It is thus ordinarily. But the acutely organised musician can realize and produce more or less completely similar effects upon his mind, not by hearing the sounds, but by reading their symbols as presented in the musical score. The notation is the symbolic representation of the musical sounds, harmonies, etc. The chemist, too, represents the composition and structure of compounds by his symbols; and the isomeric changes, motions or functions of certain substances he also presents to his mind by his graphic formulæ. The astronomer, likewise by his mass of algebraical calculations, symbolizes the molar motions of the sun, moon and planets. In all these instances there is a symbolization expressing the motions of matter. As those symbols have structural relations, the study of those relations is the study of their anatomy.

Keeping in view the biological axiom that function and structure are correlatives, and that complexity of function implies complexity of structure, we can very readily realize that such a compound combination of feelings as is synonymous with the musical sound just instanced, or with ordinary pain, admits of being studied morphologically—admits of an anatomy. The nature of that anatomy has been indicated.

To resolve the question of the anatomy of pain and other nervous phenomena into its lowest terms I venture to advance the following propositions and induction:

All nerve stimuli and all nerve impulses are motions.

Motion implies a something moved.

Motion, occurring in space and time, is the function of the something—matter.

The phenomena of motion can be presented to the mind by physical symbols.

Physical symbols—as to form, as to quantity, as to quality, as to space, as to time, in their several relations—therefore represent the physical aspects of the anatomy of nerve phenomena.

I would have it distinctly understood that in this paper I am not dealing with the nature or relations of the ego.

Pain may be studied in its physiological and in its psychological aspects. All nerve stimuli are motions, so, too, are all nerve impulses.

When those motions can be interpreted by physical means they are, therefore, classed as physiological; but when those nerve disturbances result in, or are followed by subjective phenomena that are psychically interpreted as feelings, then, it is claimed, the domain of psychology is reached. Just as we saw that the cause of pain may be objective and subjective, so also are the antecedent nerve disturbances of pain objective while the effect produced upon the centres (in consciousness) is subjective and known as a unit of feeling, a simple feeling, or a complex feeling—pleasure or pain. Analyzed in this way it becomes apparent that pain has its physiological or objective side, and its psychological or subjective side.

We are now in a position to state that pain caused by an exposed tooth pulp is not situate in that pulp, as is ordinarily expressed. The state of feeling known as pain has the nerve centre for its seat rather than the nerve periphery. We commonly say that we have pain in the finger when it receives a misdirected blow from a hammer, or in a toe when a tender corn meets with the clumsy tread of a well meaning friend. Strictly speaking, the disturbance commencing at the periphery, and becoming augmented in its progress, is received at, and perceived—makes its impression upon consciousness—by means of, the nerve centre. A particular mass of vesicular matter forming the central end of a nerve always receives the impulses from the periphery of that nerve; and there has become established a definite relation between the excitation of such a centre and the peripheral ending of the fibril connected with it. In order to make this quite clear let me restate the case. Ordinary impulses travelling along a given nerve fibre from its periphery to its centre always, in the normal condition, arrive at a certain cell; and by such action, repeated myriads of times and through countless ancestors, a definite cell area becomes the associated centre of a definite fibril. So that on just sufficiently exciting one such central area, or the fibril leading to it, there arise in consciousness those phenomena of sensation and of location similarly as when the periphery itself were the seat of stimulation. Familiar example of this latter is the pain in the third and fourth fingers on striking the ulnar nerve, or "funny bone," at the elbow; also the pain in the toes of an amputated leg. On the other hand, an irritation of a certain area of the brain—as by a tumour, or splinter of bone, or electricity—gives rise to similar sensory or motor disturbances. But let the excitation of the centre be too great, or the centre itself be surcharged as it were, and then the impulse overflows to other cells and excites them. Thus sensation or pain is referred to quite different regions from that which is the seat of stimulation. Witness for instance a disease confined to one tooth giving rise to pain in several teeth ; congestion of the liver, pain between the shoulders ; and the various nerve tracks along which neuralgia is often manifested. Or, instead of overflowing to contiguous sensory centres, or even perverting the function of the special centres, motor areas may be excited resulting in reflex muscular twitchings, clonic and tonic contractions, convulsions, and even epileptic seizures.

It will now be perfectly clear that sensation, or the reception into consciousness of sensory impulses, is the function of nerve cells. Therefore pain as a form of sensation is not situate in the periphery, as in a diseased canine tooth, but necessarily in the nerve centre. How can the pain which the patient "feels" in the toes of the amputated foot have its seat in those defunct and perhaps buried members ?

In strict interpretation of the phenomenon, I do not feel pain in an inflamed pulp ; but that sensation in consciousness which I interpret as pain I *refer* to the seat of inflammation, or *refer* to the lost toe as being the wonted termination of the divided nerve fibre in the stump ; or *refer* to the ear in the not infrequent case of overflow from the cells of the inferior dental nerve to the neighbouring central cells which supply the external auditory meatus, thus giving rise to earache.

Pain having an anatomical, a physiological and a psychological basis, serves as an index of a pathological state. The pathological state may be in the nerve peripheries, fibres, cells, or substance (neuroglia). It may be extra-neural, *i.e.*, primary affections of tissues beyond the nervous structures. It may be central, as in delusions, hysteria, and in the hypnotized. In these various ways pain is an indicator of something wrong.

From what has already been said it will be apparent that the individual who suffers pain is by no means a reliable judge of the seat of disease. Patients look upon the seat of pain as the necessary seat of disease. That this is so, recall the several examples already noticed as evidence ; also the pain in the knee in hip joint disease ;

likewise eruptions of the face and scalp in the teething process of children; cases of half the tongue furred, ulceration of the external auditory meatus; affections of the eye, perverted taste—all these latter are often secondary affections arising from nervous disturbances caused by the condition of the teeth. But this view, that the supposed seat of pain is the region of disease, is more frequently wrong than right, and the practitioner should ever be on the alert. While he interprets the true significance of pain, he must avoid being led away by the patient's localization. Who would dream of treating a varicose ulcer without first giving attention to the condition of distant blood vessels? It is the charlatan who treats effects and ignores causes. Having ascertained the cause of the pain, of the ulcer, of the convulsion—which may be immediate, mediate or remote—and directed treatment for its removal, it is good practice, and practice based upon anatomical and physiological grounds, to apply remedies to the area where morbid action is manifest. For example: A patient complains of pain in the ear; the cause is diagnosed as a faulty lower molar. While the tooth is being treated, which may take some time ere relief is found, benefit not infrequently quickly follows the application of an anodyne to the external auditory meatus. The nerve fibril from the tooth has its central cell or vesicle connected or associated with the central cell of the auriculo-temporal nerve supplying the ear. In virtue of this connection, pain is transmitted to that cell and referred to the ear. It is found in practice that by applying remedies to the area of distribution of associated nerves relief of pain often follows. This is so with regard to the case of the ear, as just cited; likewise with the application of thymol, veratria, aconite, etc., to the course and distribution of a nerve in neuralgia. Also in the treatment of inflammation by counter irritation—the counter irritant inflames the surface to which it is applied, and through the vaso-motor nerves the distant vessels at the seat of critical inflammation are influenced.

It is the possession of what knowledge is attainable as to the *modus operandi* of methods of the kind here noted that distinguishes the educated practitioner from the mere charlatan. Knowledge and the scientific method of thought and investigation are the royal roads to correct diagnosis, successful treatment and professional honor.

ARCANA FAIRFAXIANA.*

By William Rushton, L.D.S.

(*Concluded from page* 293.)

An embrocation held in high repute was called "Oyle of swallowes," presumably because these feathered bipeds formed one ingredient out of twenty-five, which went to make the oil. "Take thirty swallowes out of y^{e} nest, young and flush, and pound them very small in a stone mortar till y^{e} see no^{e} substance but feathers," and so on. It must have been something of a consolation to the dying earth worm undergoing his pounding in a mortar to know that his feathered enemy was suffering the same unpleasant process.

The standard cure for deafness seems to have been the gall of a hare mixed with woman's milk, dropped into the ear, guaranteed to cure in nine days, or this could be varied by also adding *aqua vitæ*. But one need not slavishly adhere to this cure, perhaps the following is superior: "y^{e} urine of a young man-child new-made," and this perhaps could be improved by the addition of the juice of rue and dropped into the ear. If the deafness still had the bad taste to persist after the assistance afforded by the woman or the man-child, there was still another alternative, "take a great oyster shell and fill it wth fasting spittle, lett it stand two dayes and two nights in a dunghill, then take it out and putt one drop in y^{e} eare and stop it with black wool, w^{h} is wett likewise wth y^{e} same." This was not the only use which the dungheap had to fulfil, as it was called into requisition to furnish an ingredient for an embrocation which "was used by Alexander in his wars," and which has the merit of being able to "run thro' flesh or bone, and fetch out the ache clean as hath been often proved." It certainly ought to have been well proved since Alexander's time.

Several preparations not only are supposed to exercise a curative effect, but also to inform the administrator whether the patient would recover or not. For instance, the juice of thirteen herbs is to be given the patient, "and if he cast it, it is a sign of life." I should imagine that the victim would as a rule, try to get rid of the nauseous stuff as quickly as possible. Again, "to know whether a sick man shall live or die, certenly prooved manie tymes." In this recipe the contrary effect is noted, "if he cast it upp he dieth of the same sickness." Another for the same purpose, "take a little of their water and putt into milk, and if they dye a dogg will not eat it, and if they live a dogge will eat it."

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* "Arcana Fairfaxiana Manuscripta, a manuscript volume of Apothecaries' lore and housewifery, nearly three centuries old, used and partly written by the Fairfax family," edited by Mr. George Weddell. Messrs. Mawson, Swan and Morgan, Newcastle-on-Tyne; and Elliot Stock, Paternoster Row.

The following application for freckles is a shade less revolting than the one for scurf, already noticed, "take the snaile with the shell and stamp them small, and temper them with the white of an egg."

A good example of the mixture of really serviceable drugs with others which are useless, and evidently used from motives of tradition or superstition, is as follows: "a water for divers sores, well tried." The active ingredients of this are evidently potashes, quicklime and sugar of lead, but these are kept till the last, while the recipe starts with "take the urine of yong children, knavish and wanton." That this last mentioned ingredient was in great favor I have given more than one proof. In a prescription copied from Count Leonardo Fioravanti, a celebrated Italian physician, we have "take mustard and mixe it with the urine of a boy," and again in a hideous and gruesome prescription, the weapon-salve of Paracelsus, published by Rodolphus Goclorus, professor of phisicke in Wittenberghe, 1608 (into which enter *inter alia*, "the mosse of the skull of a strangled man,"* "two ounces of the mumia† of a man's blood," "one ounce-and-a-half of earth wormes,") the patient uses the same liquid to wash his wound. Another curious direction in this latter recipe is "make this when the sunne is in libra." I must say though in fairness that this prescription had fallen into disrepute some time previously, "partly on account of the ban of the church, and partly from the increased enlightenment of the medical men."‡ Of course in a household book like the "Arcana," the recipes, &c., would be as a rule, far behind the medical spirit of the time.

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* "This was the fungus or mould which grew on the gibbetted body. It was quite an article of commerce, and was imported to supply the wants of the English market, from Ireland, where the hanging of obstreporous natives was a somewhat common occurrence.

† "Blood Serum." The word was also applied to milk-whey, and to the balsamous exudations from embalmed bodies; then to the bodies themselves, hence "mummy."

‡ Preface, Arcana Fairfaxiana.

"For the toothache. Take the inner pell of the asshen plant and burn it to asshes by itself, then moist of the ashes and make a body of it, and laye it behind y^{e} eare as a plaister, it remedieth y^{e} same." It does not say whether it is used hot or cold. I know of no special virtue in the "asshen plant." Was it used as a poultice, or were the alkaline, perhaps caustic, ashes useful as a counter irritant ?

Red sage, rue, bay leaves and wormwood were the chief ingredients in "green ointment," which cured diseases right and left, counting among its many virtues that of being "useful alsoe against toothache proseeding of cold rume."

We all love and reverence Good Queen Bess of glorious memory, and I think when we learn that she was troubled with "y^{e} winde," it draws us yet closer, knowing that she too had her ailments. Had she a bad attack of her enemy when she signed the death warrant of her beautiful rival in Scotland, or did she take an extra dose to keep herself in good condition while she reviewed her forces at Tilbury, when the Spanish fleet was off our shores ? We do not know; but we do know that it was an excellent powder of ginger, cinnamon, nutmegs, &c., and that "it comforteth y^{e} stomach and helpeth digestion."

For headache, the brains of a crow are recommended, but if it is a worm in the head that is causing the mischief, "take y^{e} marrow of a bull or cowe and putt it warme into y^{e} eare, and y^{e} worm will come forth for sweetness of y^{e} marrowe." The gall of a hare too, mixed with honey and rubbed in, is not to be despised.

The cures for consumption and rickets are several, though they bear a general resemblance. The chief ingredient, as a rule, is a cock (one recipe has a "red pigge") and he must be a red cock, and he "must be runne till he is weary" before being killed, or as an alternative you may "smother him in his bloud, and let him ly^{e} on y^{e} ground about an houre." The recipe of My Lady Fairfax for rickets, "for rich folkes" contains "six leaves of gold, white-amber powdered two dragms, prepared pearl three dragms," while "y^{e} poorest folk" must be content with garden snails and rose water (this is one of the few dated recipes, Feb. 25, 1632.)

For weakness, especially in women, powdered swine's claws are ordered, while to strengthen the back, the "pith of an oxe-back" is recommended. Another back strengthener, highly recommended, would be called now-a-days an egg-cocktail, or some such name, a most delicious compound, strongly alcoholic, and which I daresay beat the ox-pith hollow in popularity.

The recipes for the prevention and cure of the plague are many and various, though they bear a general resemblance in having several herbs and roots of a comforting nature, such as ginger, cloves, nutmegs, &c., macerated in wine and *aqua vitæ* (also of a comforting nature). The patient is ordered to take a dose or two and go to bed, and endeavour to produce a copious perspiration. One plague water contained as many as forty ingredients, including pimpernell, marigold flowers, cowslip flowers, gilliflowers, Venice treacle, three gallons of good brandy, &c., but the favorite seems to have been a "soveraine water of Dr. Chambers, phisition of London, wherewith he did many cures, and kept the receipt thereof secret till a little before his death, and then he imparted it to Dr. Abbott, Archbishop of Canterbury."*

The virtues of the water are many, "It comforteth the vitale spirits," "it helpeth the conception in women that are barren, it helpeth the worms within the body, it helpeth the stone in the bladder," "it helpeth the toothache, it easeth the could dropsie, it presently easeth a stinking breath." Besides these and many more which I will not weary you with, it has the following remarkable property: "Whosoever useth this sometimes and not often, it preserveth them in the strength of their bodies, and shall make them sound and young long. It comforteth nature marvellously." As it is very strongly alcoholic, this last fact is not surprising.

The following might be recommended to the House of Commons in their struggle with the influenza. It is a prescription of y^e^ Lady Selby against the plague. "To cleanse an infected house. Stoppe up y^e^ chimneys and windowes, then take tallowe, tarre, pitch, soot and vinegar, boyle thease in an earthen pott upon a chafing dish of coales and make a perfume." What the "perfume" would be like, is left to the imagination.

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* Dr. Abbott was Archbishop of Canterbury from 1610 to 1633, and was succeeded by the notorious Laud, about whom there has lately been a discussion as to whether he was a superstitious demon or a misunderstood Saint.

"How to know king's evill. Take a ground-worme alive and lay him upon y^e^ swelling or sore, and cover him with a leafe. If it be y^e^ disease y^e^ worme will change and turn into earth, if it be not he will remain whole and sound."

"For an ague. Take clean spiders webs, half a drachm, and swallow it down in any form for severall mornings successively." An alternative prescription is bark. Here we see a transition stage from old remedies to those used at the present day.

I wonder does M. Pasteur know of the following remedy: "for the bite of a mad dog published for the benefit of mankind, in the newspapers in 1741, by a person of note." "Take two quarts of strong ale or wine, red sage and rue, of each an handfull and an half. Twelve cloves of garlick bruised, of tin and pewter scraped two spoonfuls, of London treakle or Venice treakle one ounce," &c. "This medicine has stood a tryal of fifty years experience, and was never known to fail."

I shall now bring this somewhat sketchy and discursive paper to a close by quoting a few recipes for toothache. I am glad to say that the first two are not in the handwriting of the Rev. Henry Faixfax, or my opinion of his veracity or sanity would be grievously shaken. "To pull out a tooth. Take worms when they be a-gendering together, dry them upon a hott tyle stone, then make powder of them, and what tooth y^u touch w^{th} it, it will fall out," or "take wheat-flour and mixe it w^{th} y^e milk of spurge and thereof make a paste or dowe with y^{t}, w^{ch} fill y^e hollow of y^e tooth and leave it in a certain time, and y^e tooth will fall out." It is difficult to believe how many of these statements met with, could possibly have been believed in and transmitted.

The following prescription of a later date is of a very different stamp, and is practically what we use daily for destroying pulps. I am very sorry the date is not given, but unless it is very much out of chronological order (and it may be as the handwriting is very different from its neighbours) it would be about 1630-40. "For the toothache. Take white arsinicke and bole Arminiack,* of each a little quantitie, make these up into a small pellet with a drop of *aqua vitæ*, a drop of sallet oyle, and a little lint, stop

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*Evidently used to dilute the arsenic. "Bolus Armeniæ" was the name applied to several argillaceous and calcareous minerals obtained from Armenia and other localities. Stocken. *Materia Medica.*

therewith the hollow of the grieved tooth two or three houres; swallow not, but spit out the rheum that shall flow into the mouth, and let not the party sleep while it is in the mouth." The reason of these precautions is obvious, but it is not so obvious that the special use or object of the arsenic was known, and it is safe to say that the various causes of toothache were not understood. It is not too much to suppose that this remedy was often used in cases where it did more harm than good. Strange to say, there are no laudatory remarks about this recipe, as is so often the case throughout the book, even with worthless remedies. The last receipt for toothache in the book is of later date again, and is naturally more sensible than some of the former ones quoted. "Crude opium and camphire, of each a grain, putt y^{m} into a bag and hold to y^{e} teath."

The interest and instruction which the book has provided me, led me to hope that the few extracts and comments which I have jotted down have not been quite void of interest to others.

REPORTS OF SOCIETIES.

THE DENTAL HOSPITAL OF LONDON AND LONDON SCHOOL OF DENTAL SURGERY.

The Annual Prize Distribution of the above School took place at the Royal Institute Galleries, Prince's Hall, Piccadilly, on the 22nd ultimo. It was also made the occasion of a pleasant Conversazione, which drew a large and representative gathering of the staff students and friends.

The Dean (Mr. Morton Smale), read a very satisfactory report. He said:—It is customary on these occasions for the Dean to make a report with regard to the school, and the year which comes to an end at the close of this Summer Session has been a particularly eventful one. With an entry of about 50 students the demands made both upon the capacity of the building and upon the teaching power of the institution have been very great. So much so, indeed, that it has been found necessary to increase both, inasmuch as it has been decided that it is undesirable to build a new hospital upon an increased area, and that it is impossible to increase the depth of the present one, it has been found necessary to provide more opportunity for both practice and teaching by opening the hospital in the afternoons, under the care of a special staff to superintend the work.

The hospital has been fortunate in securing the services of gentlemen to constitute the afternoon staff who are not only likely to add materially to the teaching power, but also to reflect credit upon the hospital. This, however, can only be a temporary measure to meet the demands made upon the school for each year. Dentistry is earning for itself the right to be ranked amongst the learned professions. This must necessarily attract a large number of young men as students, when it becomes recognized, as it soon must, that the practice of the profession of dentistry is an honourable one, and its members are both professionally and socially on an equality with all the other professions, and that of all of them there is none which provides a better opening for a useful and honourable means of livelihood. Its students also, by the curriculum and examinations required of them, are in all respects on an equality with the students of other professions. While of the examinations it may be said that in no calling in life are the tests, to which the candidates for the dental science are put, equalled or surpassed to obtain a qualification to practice.

It may be true that charlatanism and quackery press somewhat hardly upon those who desire to practise their profession honourably, but I venture to think not more severely than they do upon kindred professions, and those of you who shortly are to begin the struggle for existence may take courage from the fact that the most inveterate advertising institute in a pamphlet that it circulates apologises for advertising and promises to cease doing so as soon as the credulous public have fully recognised its miraculous and ridiculous claims, a fact that points out very clearly that its promoters recognise that the public are beginning to understand that for professional men to advertise is "*infra dig.*" But as the position of the dentist's calling has been earned in the past by the consistent and persistent doing of right of those interested in its welfare, so must it be maintained in the future by you and your successors. It is in your hands, for henceforth nobody can obtain the right to call himself a dentist unless he be qualified, and if every unit will do right then shall the whole profession obtain its due professional position. The school, ever anxious for the welfare of those entrusted to it, and looking forward to the bright—I had almost said brilliant—future, has arranged with the Committee of Management that the two societies that in the past have had their headquarters at the hospital shall shortly vacate their quarters in order that the whole of the hospital building shall be devoted to hospital purposes, and even then it may be found necessary to take adjoining premises for school purposes in which duly fitted-up laboratories may be erected for dental microscopy, bacteriological research, and kindred subjects.

The staff is quite determined to meet the demands that may be made upon it in the future. The Odontological Society and the Dental Hospital of London are so closely interwoven that it is not without a pang that a lifelong union is to be ruptured, but inasmuch as both have so developed it is better for both that each should have headquarters worthy of them, and to each it may be prognosticated that benefit, not harm, will accrue.

In order that the teaching may be more thorough, four demonstrators have been appointed, each of whom will give theoretical and practical teaching upon operative dentistry. The gentlemen appointed being Messrs. Briault, A. Colyer, Dolamore, and J. P. Smith. The mechanical laboratory continues to be a great success, and enables the students to prepare for the practical test required by the Examining Board for the Dental License, of which practical examination it may be said there will be no decrease in severity. Five of our students have added to the prestige of the school by obtaining the double qualification of M.R.C.S., L.R.C.P., viz., Messrs. Hoffman, Arthur Colyer, Hope, and G. Hern, the latter having succeeded in securing the three qualifications in three years and nine months, and, in addition, has ably filled the posts of Assistant and full House Surgeon.

Six gentlemen have passed the second examination for the double, and five the first examination for the double. The Charing Cross Hospital Prize List is again well sprinkled with the names of our students, eight first prizes and the gold medal having been won by dental students: of this your staff are justly proud, and look forward to even greater success in the future. Through all the history of your hospital school one word has ever been its watchword. Let each of you for the future adopt as your motto : Thoroughness. At all times it has been, so let it be still, and even the brilliant history of the past may yet be surpassed by you and your successors.

The prizes were then distributed by the Ven. Archdeacon Farrar, D.D., F.R.S.

The following is a list of the prize-winners :—

Saunders Scholar	Mr. R. N. Gracey.
Ash's Prize (*Given by Messrs. Ash & Sons*)	Mr. E. Balding.
Certificates	Mr. B. A. Castellote. Mr. S. H. Hayward.

CLASS PRIZES, WINTER SESSION, 1890-91.

MECHANICAL DENTISTRY.

1st Prize	Mr. C. J. Allin.
2nd Prize	Mr. E. Balding.
Certificates	Mr. F. T. Ladmore. Mr. A. P. Spurr.

METALLURGY.

1st Prize	Mr. T. A. Coysh.
2nd Prize	Mr. R. N. Gracey.

PRIZE IN OPERATIVE DENTAL SURGERY.

1st Prize	Mr. E. Gardner.
2nd Prize	Mr. T. A. Coysh.
Certificate	Mr. E. Balding.

CLASS PRIZES, SUMMER SESSION, 1890.

DENTAL SURGERY.

1st Prize	Mr. R. N. Gracey.
2nd Prize	Mr. A. P. Spurr.
Certificates	Mr. S. H. Hayward. Mr. E. Balding. Mr. F. T. Trott. Mr. C. S. Reed. Mr. E. W. Harwood.

DENTAL ANATOMY.

1st Prize	Mr. R. N. Gracey.
2nd Prize	Mr. S. H. Hayward.
Certificates	Mr. E. W. Harwood. Mr. C. H. Watson. Mr. E. Balding. Mr. F. T. Ladmore. Mr. B. A. Castellote.
Students' Society Prize	Mr. A. C. Gask.

The awards having been made, the Archdeacon addressed the students in an impressive and interesting speech, of which the following is an abridged report:—

The distribution of the prizes and certificates to the student was to him an easy and pleasant task. He had now to fulfil a task which was difficult, and which was not pleasant either to himself or to his hearers. He had been euphemistically asked to "say a few words," which meant "make a short speech." He was anxious not to trespass upon the attention of his audience, and therefore would plunge at once *in medias res*. The Dean, in the course of his interesting report, had spoken of "thoroughness in work." He (the Archdeacon) would make that the key-note of his observations. He had no right to offer any advice to the numerous young students he saw before him, unless it were the right given by the large span of years which separated him from them.

There was nothing so easy as to be superficial; as to be content with a rudimentary knowledge, to be content with a rule-of-thumb acquaintance with things, partly derived from a shallow experience and partly from elementary facts. He wanted the students not to be content with superficiality, and he would say this not only for the sake of science, but also for their own sakes. They had heard that dental surgery was taking its place more and more as a science: nothing would so much assist its course in that direction as thoroughness in work, and nothing more powerfully contributes to the extinction of that charlatanism to which the Dean had referred. Let them not think "all is known that can be known" in connection with their profession; no opinion was more fatal to progress than that. He believed that great as had been the strides already made, advances yet more immense lay before them. As in other branches of knowledge, so also in the pathway of dental science, progress would be made by the observation of simple and neglected facts, facts which might be thought so simple that a child might notice them. It was from the aggregation of such facts, and the inferences to be derived from them, that discoveries were made. Millions had seen the fall of an apple before Sir Isaac Newton deduced from it the law of gravitation. Millions had seen Saturn and Jupiter, without anyone before Galileo seeing in them the proof which should be the basis of modern astronomy. If they looked at the advances of science, they would see again that they had been the result of the careful observation of facts which had been known long before, but which had been unappreciated. In acoustics, the telephone, the phonograph, the microphone were illustrations of the point he was urging. Electricity again attracted no real attention until Franklin showed that the lightning was the same fluid that we can brush out of our hair or rub from the back of a cat. Archdeacon Farrar hoped that the students would learn to apply facts in their own profession; that they would aim at that thoroughness of which the Report spoke, and that they would endeavour to show before they died that they had tried to do something for the happiness and good of the world. It should be their object to alleviate one of the most distressing and agonising of human pains, of which an ancient writer had said—

"There never was philosopher yet
Who could bear the toothache patiently."

The students had, therefore, a large field of observation and applied science before them, and he hoped that they would not make it an ordinary and superficial study. As he had urged that upon them for the sake of science, he would urge it upon them also for the sake of themselves: in the words of the scriptural maxim he would say to them, "Whatever thy hand findeth to do, do it with all thy might." Let the spirit of the old English couplet animate them:—

"If I were a cobbler I would make it my pride
The best of all cobblers to be,
If I were a tinker no tinker beside
Should mend an old kettle like me."

Let them strive never to be less than their utmost, and never to do less than their best. They all knew the reply Mr. Spurgeon received when he asked a servant how she knew she was converted. She said that "She knew that she was converted because since she was converted she always swept under the mats." That might perhaps be thought a common-place and vulgar illustration, but it breathed exactly the same spirit as the answer made by a sculptor when asked why he was spending so much labour on what would be seen by so few: he made the magnanimous answer, "The Gods will see it." There were always two witnesses in the life of an individual, one witness would be himself and the other would be God. Each one bore within himself a court of justice—himself judge and jury, himself prisoner at the bar. When a man's conscience condemned him it was that which dragged him down. The Archdeacon, therefore, urged his hearers to try to do their best in the most honourable way: This would be a source of happiness and satisfaction to them, and beyond that they should remember that the ultimate Judge was the Supreme Disposer and Giver of those lives.

He would add a few words only on another subject. They knew that the late Lord Beaconsfield, who was a man of a very kind heart, once said when addressing students "I bid you aspire," and they knew from the life of Lord Beaconsfield how he had made that motto his; how, when he was but a lawyer's clerk, on being asked what he meant to be, he replied "I mean to be Prime Minister of England."

In the words of Lord Beaconsfield, if there were any students present who would listen to words of counsel, he would also "bid them aspire." But he would not bid them aspire to make money only, he hoped that every one of those entering upon life would make it a subordinate object, and never stir a hair's breadth from the straight line of honour. A prominent American once said of the youth of his native country that the great object of their lives might be said to be the three degrees of comparison—they first desired to get on, they next desired to get honour, and they last desired to get honest. (Laughter.) This, Archdeacon Farrar did not think was ever true of any country in the world, but he did hope that none would set success before themselves as a thing to be obtained unless it could be obtained without the sacrifice of honour. A walk of a quarter-of-an-hour or less through Westminster Abbey would convince them that there had been a great number of men eminently great and eminently good who had never obtained success if success were the acquisition of wealth, and yet the world acknowledged their greatness and held their memory in veneration. Indeed, some of the world's greatest men had died the poorest. Even if those to whom he was specially addressing himself succeeded in becoming rich, and succeeded by honorable means, if that alone were the success they set before themselves it would not bring happiness. None had succeeded, as the world counted success, more than the kind-hearted statesman whose words he had quoted; he became prime minister, he became a great earl, he became a Knight of the Garter, and yet, if they read that remarkably interesting book by Sir William Fraser, if they read the last page of that book they would find the testimony borne by Sir William Fraser to the great Earl of Beaconsfield, it was this: "I think if I were to express in a single word the impression his life has made upon me, it would be the one word *pity*." If success, and success alone, were put first it would not satisfy, but to be true men, true Christians, was an aim which the poorest and least endowed might attain, and this would bring happiness. Someone had said, "How great a thing is man if he will only be a man," and the late President Garfield, when asked what he intended to be, said, "Well, first of all I mean to be a man, if I succeed in that then other things may follow, but whatever may follow will be quite useless unless I can become a true man."

The Archdeacon in an eloquent peroration said that he could not better conclude than with the advice given by the poet in the following words:—

Follow thy better self,
Follow thy better *will*,
And so thy better self
In thy best self fulfil:
To thy best self be true.

To hold an *honest hand*,
To own an *honest name*,
To feel an *honest* heart
Is more than wealth or fame:
To thy best self be true.

Go face the future then,
Obey thy soul's best word:
I will lead thy steps to peace,
I will lead thy soul to God.
To thy best self be true.

So shall thy *influence bless*,
And when thy years are *past*,
So shall thy better self
Thine Angel be at last:
To thy best self be true.

The remainder of the evening was pleasantly occupied in listening to Edison's Phonograph, introduced and explained by Mis Ferguson; a selection of part songs excellently rendered by the

Hospital Musical Society; and a new musical sketch, "In Search of an Engagement," was given most effectively by Miss Nellie Ganthony. It was a happy thought that led to the selection of the spacious rooms of the Institute Galleries for the occasion. All unpleasant "crush" was avoided, and the intervals were agreeably occupied in viewing the Exhibition by the Society of Portrait Painters.

Discussion on Anæsthetics in the Therapeutic Section of the British Medical Association, at the Annual General Meeting at Bournemouth, 1891.

The President of the Section (Dr. Snow, of Bournemouth), called upon Dr. Lauder Brunton, F.R.S., of London, who narrated the share he had had in the experiments undertaken by the Hyderabad Chloroform Commission. The origin of the Commission was the munificence of His Highness the Rajah of Hyderabad, who at the instigation of Surgeon-Major Lawrie, B.M.Edin., had given a large sum of money to defray all the expenses incident to the undertaking. Dr. Lauder Brunton stated that the conclusions at which the Commission had arrived were the result of some six hundred experiments, which, although few in number, yet represented a much larger number, since each one was a death. He projected upon a screen photographs of the actual tracings obtained, and explained in detail the mode of experiment. Thus, when a tracing was taken, *e.g.*, of blood pressure, the record was made upon two revolving cylinders, the one a slow, the other a quick movement, which enabled the observer to record, not only the main curves, but also the details. In this way, blood pressure tracings were demonstrated, which revealed the fact that under chloroform there was a constant fall, which, however, never reached a dangerous point unless the respiration of the animal was interfered with. When this occurred there was at once a marked fall of blood pressure, which resulted in death unless the obstruction to breathing were removed. The experience of the Commission led them to believe that, provided this interference with respiration was guarded against, chloroform gave rise to no dangerous symptoms. The fall of blood pressure was regarded as a protection, the result of vagal action being to slow the heart, and so lessen the rate of circulation of the chloroform-laden blood stream.

Dr. LAUDER BRUNTON, referring to the assertion of Professor Wood, of Philadelphia, that he had found heart failure to occur as a result of the fall of blood pressure, even when the respiration continued, stated that the Hyderabad Commission had made a number of tracings similar to the one upon which Professor Wood based his conclusion, and had at first been unable to account for them, but investigation had shown that the true cause of the tracing was the formation of a clot in the canula, and that when this was removed the heart trace was restored. Dr. Lauder Brunton said that the Commission expected to find the "fatty heart" play an important part in the matter, but their experiments made upon animals which were poisoned by phosphorus, and then subjected to chloroform had not shown that these creatures died from heart failure. In conclusion, Dr. Lauder Brunton emphasized a statement which he had made in opening his address, namely, that deaths under, or during the administration of chloroform must be carefully distinguished from deaths due to chloroform poisoning, as deaths from shock had occurred in pre-chloroform days, and took place now in cases when the patient was not thoroughly under chloroform at the time of the operation.

Dr. SHORE (Cambridge) gave an account of some experiments conducted by Dr. Gaskill and himself, which were undertaken to investigate the cause of the fall of blood pressure which occurs in chloroform administration. The experiments were made on animals in which tracings of the respiration and blood pressure were taken. The chloroform was given in various ways. (1.) Inhaled through the trachea. (2.) Introduced into the carotid or vertebral artery, either by injection of a drop directly into the blood stream, or by transfusion of blood from the arteries of another animal to which the chloroform was given. (3.) Injected into the jugular vein. (4.) Applied directly to the 4th ventricle of the brain. The experiments show that chloroform acts powerfully on the respiratory centre in the medulla, leading to a slowing and an arrest of respiration. Less than one minim of chloroform injected into the vertebral artery is sufficient to stop the respiration at once. The neighbouring vasomotor centre in the medulla is not paralysed, but, on the contrary, stimulated by the chloroform, and a rise of pressure results. Chloroform introduced into the jugular vein leads to a weakening of the heart's beat and a fall of blood pressure, but if the injection is continued, the respiration ceases before the heart absolutely stops. Anæsthesia in animals may be produced by chloroform with little or no fall of blood pressure if chloroform be administered with plenty of air. A fall of pressure, however, usually takes place, and this is due to direct action of chloroform on the heart, and not to a paralysis of the vasomotor centre. The respiration in all cases ceased before the heart beat, but in some cases the blood pressure, in consequence of the weakened heart, was obviously insufficient, and death must be ascribed in these cases to failure of the circulation.

Dr. DUDLEY BUXTON (London) then opened the discussion from the clinical point of view. He said, he could not but preface his remarks by a few words expressive of the deep regret which he and all present must feel that Dr. Charles Sheppard, whose name appeared upon the programme, had since its publication passed away. Speaking in warmly eulogistic terms of Dr. Sheppard, he commenced the discussion by saying that there were four sources at least of information derivable from clinical sources about anæsthetics and their behaviour. These were (1) published accounts of deaths occurring under an anæsthetic ; (2) accounts of dangerous and anxious cases under anæsthetics ; (3) the results of necropsies made upon persons dying under an anæsthetic ; and lastly (4) the results of experiments made upon human beings who had placed themselves voluntarily under experiment. The results of statistical enquiry showed facts which proved that deaths occurred both among the apparently healthy and robust as well as those who were diseased. It was said that fatalities of the strong and robust were deaths under rather than from chloroform, but this explanation was insufficient, since similar occurrences should, if this were the case, take place in a like proportion when ether, laughing gas or other anæsthetic was given, and no such deaths were recorded. Again, the so-called deaths from fright were so exceedingly rare that it could scarcely be accepted that such an explanation accounted for more than a small fraction of the cases. Of the residuum of cases, most occurred in the initial stage of chloroformisation and were characterised by the most terrible suddenness of onset of the symptoms of danger. They occurred in persons who had taken chloroform previously and both among those who were fearful and those who were free from timidity. In this place he must point out that persons who expressed great fear of the anæsthetic and who thought they would die under it, commonly, in his experience, took the anæsthetic as well as other persons, so that fear was by no means a constant factor in sudden death under chloroform. Then again, these sudden deaths were very often in cases when a trifling operation was to be performed, the reduction of a dislocation being frequently the occasion when death occurred. Death often took place before any surgical measures were commenced and both when the chloroform was being given by experts or by tyros. In all these deaths the heart was said to have stopped either simultaneously or before respiration. Among the diseased Dr. Dudley Buxton thought that fatty degeneration of the heart was at all events statistically the most common pathological lesion associated with sudden death from chloroform. He was aware that in this particular clinical results were at variance with those of the Hyderabad Commission, but he was not there to criticise the Commission's work, although he thought it was open to severe criticism upon several of its findings, he would therefore only say that he was sure that the results obtained in the lower animals by poisoning them with phosphorus were very different from those occurring in individuals whose heart muscle was the seat of fatty change. In this last case, the fatty heart was but one lesion of many, all of which were expressions of a general state of malnutrition and enfeeblement. Statistics again showed the fallacy of the once universally accepted statement that women and children were less liable to death from chloroform than men. Snow, whose book Dr. Dudley Buxton regarded as still a model of scientific research and method of dealing with the subject under discussion, had been led into error by the comparatively small number of cases he had been able to collect. Young children, old persons, and parturients had all died from chloroform. The supposed immunity of children was due to the less frequency of their requiring chloroform as well as the usually more healthy state of their body. Old persons having surmounted the dangers of life were also presumably more vigorous, and so better able to escape the depression brought about by the drug. Women in childbed usually took chloroform under the most favorable conditions, seldom inhaling enough to carry them beyond the point of analgesia, and always with an extremely dilute vapour. Dr. Dudley Buxton then gave examples of the second source of information, viz.: cases in which no death but only dangerous symptoms had supervened, and urged the immense importance of the investigation of the cases. Referring to ether, he said that he believed deaths from this agent were in the very largest proportion of cases preventable. As a matter of fact, few persons understood the proper way to give ether, and so struggling and distress arose, and it was these which gave ether a bad name and jeopardised lives. He urged the necessity for careful and thorough training of young doctors before they were entrusted with the responsible duties of an anæsthetist. He entered a vigorous protest against the statement of Dr. Lauder Brunton, that ether did not produce anæsthesia unless the patient was concurrently semi-asphyxiated. Dr. Dudley Buxton then detailed various interesting points concerning the symptoms brought about by chloroform and ether when given to patients in different postures, and for various operations, mentioning empyemas as cases of peculiar danger and difficulty, and stated that he had adopted the plan of rectal etherisation for them.

Mr. PRIDGIN TEALE (Leeds) gave a forcible paper in favour of ether. He had collected the published cases of death under anæsthetics for the past year, and had found that chloroform was the agent which killed. It was startling to learn that in spite of the vaunted safety of chloroform it had been the means of killing so large a proportion of patients, and what was more distressing, they had died when operations of the most trivial kind were being performed. He had worked with chloroform for many years but had been induced to try ether, and the increase in his feeling of comfort and security since then was remarkable. Ether he regarded as a safe anæsthetic, which, if properly given, need give no distress, and possessed the great advantage that when the patient was once under its influence but little more of it was required. Mr. Pridgin Teale then described in detail the method he adopted, which was that commonly followed when Clover's small portable regulating inhaler is used. He laid considerable stress upon the importance of attention to details, *e.g.*, having a large bag into which the patient breathes, &c. In the case of children he commonly deadened sensibility by giving a few whiffs of chloroform, and following up with the ether.

Mr. George Eastes, M.B. (London), next read a communication in which he proceeded to criticise adversely and at some length the conclusions at which the Hyderabad Commission had arrived. He considered it unsafe to argue wholly from the lower animals to man, and especially when results conflicted. The difference of climate between India and Europe probably also played an important part in the matter. But even accepting the experiments upon lower animals as tantamount to those on man, he reminded his hearers that the conclusions were at variance with the results attained by other observers. Personally he attached more importance to the clinical aspects of the matter, for after all each administration of an anæsthetic to a patient really amounted to an experiment, and the experience of many thousands of such cases went dead against the researches of the Hyderabad Commission. It must be remembered that the conclusions of the Commission had now been published some time, and no doubt most of those who administered chloroform would be aware of them, and very many would follow out the directions to the letter, yet in spite of this the death rate was, if anything, higher than before, and fatality after fatality was recorded in the journals. Surgeon Major Lawrie could boast clinically of a most remarkable record of cases in which chloroform had been safely administered, but the difference of the environment of his patients from that of Europeans possibly accounted for that. Indians were accustomed to a different dietary, the race traits rendered comparison between them and European patients inadmissible. Anæsthetisation was in every case an approach to death, the various agents used were different only in the margin they left between sleep and dissolution, and chloroform gave less margin than ether. This was what clinical evidence showed. Mr. Eastes then described the methods which he thought were best.

The Secretary of the Section (Dr. Childs, of Weymouth), after speaking of the great importance of clinical investigation, suggested that a Committee should be appointed with the object of investigating various questions concerning anæsthetics, such as the relative safety of chloroform and ether, the best methods of administration, and so on.

This having been embodied in a resolution, it was put to the meeting and carried, Dr. Lauder Brunton, Dr. Dudley Buxton, Mr. Pridgin Teale, and the officers of the Section (*ex officio*) being requested to serve upon it.

Dr. **Sidney Coupland** (London) warmly commended the suggestion of the formation of the Committee, as he believed the work it proposed to carry out would prove most useful. He commented upon the anxiety which physicians often felt about their cases, *e.g.* those of empyema, when an anæsthetic was to be administered. He had a case under his charge which, when transferred to a surgeon for surgical treatment, had died under the anæsthetic. Practical rules for their guidance, in advising or discountenancing the use of one or other anæsthetic in such cases, would prove of very great value to physicians.

Dr. **Copeman** said that he had been compelled to give chloroform to a large number of the lower animals, and in his experience whenever he used methylated chloroform the animal died, but not when the purer forms were employed. He had been assured by manufacturers that the methylated chloroform was to all intents and purposes as pure as any, but this was at variance with the behaviour of his animals. So sure was he that when by any accident the methylated chloroform was used, the symptoms produced would always show him the error. He also thought an important point was to warm the air which passed through the chloroform: since adopting this precaution, his results with the lower animals were better.

Mr. **Harsant** (Bristol) thought statistics were of little value by themselves, for the results of different people under varying conditions were most dissimilar. In support of this, he read a number of statistics of deaths under anæsthetics, which were certainly very conflicting. With regard to the mode in which chloroform killed, it was disappointing to find scientists so much at variance. Dr. Lauder Brunton, Professor Wood, and Dr. Gaskill, seemed to almost contradict each other's results. Personally, he had no doubt that chloroform killed first by causing primary heart failure, and secondly, by its action upon the heart centre in the medulla. He had used chloroform about as frequently as ether, but had never met with the same dangers and difficulties with the latter as with the former agent. He narrated the only case of death in his practice when ether had been given, but as the patient had regained consciousness for some while, and death had occurred suddenly upon his sitting up in bed, he attributed it to syncope and not to ether.

Mr. NEVE (India) spoke of ten years' experience in hospital practice in India, during which he had seen chloroform administered 4,000 times without a death. These cases were in different parts of India, the range of temperature being very wide. He believed many deaths were the result of an insufficient dose of the chloroform, and he narrated a case illustrative of this. He always followed the Edinburgh method.

Dr. HORSFALL, a local practitioner, expressed his personal belief in the safety of chloroform when it was given pure and given properly.

Dr. RENTON (Glasgow) had learned how to give chloroform under Syme and to believe in it. He had met with several anxious cases and not a few difficulties. He had since been induced to employ ether and had now given up chloroform as he found with ether there was less anxiety, and whatever difficulties or dangers arose were easily met and overcome, which was not the case with chloroform. There was but one desideratum, and that was a simpler apparatus: Clover's smaller inhaler, admirable as it was, was yet more complex than many men cared to employ.

Dr. TYSON remarked that one most important matter was that even if ether and chloroform could be shown to be equally dangerous, yet dangers arising from ether were so much more gradual in their onset, and so much more easily grappled with, that there would always be a much more favourable record for ether.

The Hon. Dr. LEFEVRE (Australia) thought that a colonial's experiences might be of interest. There was a growing feeling in favour of ether, but the methods employed were as yet far from satisfactory.

Dr. LAUDER BRUNTON replied,—and

Dr. DUDLEY BUXTON, after replying, gave, at the request of several persons present, a brief account of the methods he employed in practice.

The Session closed with some appropriate remarks of the President, who said he had never been present at a more eloquent discussion, nor one in which the disputants, although holding very opposed views, yet had avoided any language which could give rise to unpleasantness or misunderstanding.

Selections.

THE PHYSIOLOGY AND PATHOLOGY OF THE SECOND DENTITION.*

By Richard Cole Newton, M.D., Montclair, N.J.

A year ago I had the honor of addressing this learned Society on the subject of "The Teeth as a factor in Diagnosis." Naturally, as a clinician, I looked at my subject from a practising physician's stand-point. The discussion, however, which my paper excited showed that the dental profession is fully alive to the economic importance of the teeth, and has noted and studied the peculiarities in these organs which are caused by different cachexiæ and various morbid states of the system, whether hereditary or acquired. Having been doubly honored by a second invitation to read a short essay before you this year, it has occurred to me that one might with profit take up another phase of our subject of last year and consider the physiology and pathology of the second dentition somewhat in detail. When we reflect that the infant comes into the world with the rudiments of four permanent teeth, we may fairly say that the physiology of the second dentition begins in intra-uterine life and terminates with the eruption of the wisdom teeth, say at twenty years of age; we have then to do with the most important third of human life, at least from a physiological point of view, and a thorough discussion of our subject would take us over a great extent of ground, much of which is already familiar to you. I will not, therefore, weary you with an elaborate discussion of the physiology of the first twenty years of life, but will endeavour to point out the relation that the process of the second dentition bears to the general health, and will supplement this with a few remarks on the hygiene of this period, which I trust will not be without interest.

Human life has roughly been divided into periods of seven years, and it is estimated that the whole body will be practically transformed by the slow process of elimination and substitution in about that period of time. The period of life from birth until the completion of the second dentition naturally divides itself into three periods of about seven years,—viz., first, until the complete eruption of the first four molars of the permanent set; second, until the complete eruption of the second four molars of the permanent set; and third, until the complete eruption of the third four molars.. Of course these periods are subject to considerable variation, especially the last; but they are constant enough for the purposes of discussion, and afford convenient divisions of our subject. The first period, *i.e.*, from birth to seven years of age, is, I am inclined to assert, without fear of contradiction, from a physiological stand-point, the most important period of human life, and I believe that it can be shown that the care of the child up to seven years of age has more to do with his subsequent development than any other factor, heredity, perhaps, excepted. During this period the crowns of all the permanent teeth, except the third molars, are formed. The brain experiences over two-thirds of its complete development. The child has mastered the use of his senses, has learned to reason, has learned an elaborate and difficult language, and has often learned to read, etc. In short, in no other seven years of our earthly existence is a corresponding advance made. Now, what marks the conclusion of this period? I reply, the complete eruption of the first molar teeth of the permanent set. Owing to the varying lengths of time that different children take to reach the same stage of development, the eruption of these teeth affords a far better and safer criterion of the completion of the first physiological period of life than the mere lapse of months or years. By the English factory laws a license to work full time is not given to the youth of either sex until the second four permanent molars are completely through. This has proved to be a more reliable test of physical capacity and endurance than age or statue, since often the tallest and largest children are really the most immature and frail. Nor is it unnatural that it should be so. *Ceteris paribus*, it must take longer to develop a large body than a small one, and the old-fashioned phrase, "outgrown the strength," like most popular notions, has a foundation in fact. Naturally the development of the first four molars has less interest from a commercial point of view, but it undoubtedly marks as important a stage in bodily development as does the eruption of the second molars.

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* Read before the New Jersey State Dental Society, at its Annual Meeting, 1890.

We see, then, that the complete eruption and occlusion of the first molar teeth mark a very important era in human life. The brain has attained very nearly its growth, although it increases slowly up to twenty or even thirty years of age. Its growth subsequent to seven years of age is much slower than previous to that time.

The body has also at seven years of age attained about two-thirds of its height and over one-third of its average weight, if its processes have gone on normally, and I think I have said enough to show that the complete eruption of well-formed first molars is the most important criterion and sign of a normal development of these great powers and a completion of the first great division of human life.

The second physiological period is, like the first, ended by the complete eruption of four molar teeth,—viz., the second permanent molars. During this period the rudiments of education are secured, the character is for the most part formed, etc. By fourteen years of age a pretty fair estimate can be obtained of the way in which the child will turn out physically and mentally. Are there any especial features that interest us as clinicians in the second dentition, especially from the seventh to the fourteenth year?

The late Dr. James Jackson, of Boston, in his well-known "Letters to a Young Physician," dwells at some length upon the diseases of the second dentition, as does also in another place our distinguished countryman, Dr. George B. Wood. As there are those who deride the considerable importance accorded to the first dentition from a clinical stand-point, no doubt there will be very many who will assert that there is little or nothing to be said in the matter of the clinical importance of the second dentition, but I think it can be easily proved that the latter class seriously under-estimate the significance of the second as well as of the first dentition.

Mr. Jonathan Hutchinson says that the first four molar teeth are the test-teeth of a condition in children which leads to the formation of cataract, and which is also characterized by weak teeth, deficient in enamel. He says that there is no especial alteration in the form of the teeth, nor is the enamel uniformly defective and soft. It is wanting in irregular patches. There is perhaps no man living who has more carefully studied these questions of diathesis, development, and heredity than this distinguished Englishman, and the great value that he has been led to attribute to the teeth as marks and signs of constitutional vigour, or its opposite, and of normal, abnormal, or retarded development, is, to my mind at least, a marked tribute to the great importance of the line of inquiry upon which we are now engaged, and which, as I said before, has not as yet been sufficiently followed up.

Of course, all divisions of human life into periods of years are merely arbitrary. A man's earthly existence is not like a ball player running his bases. We do not reach one period of life, then stop running and wait for another chance. We advance pretty steadily from the cradle to the grave, developing up to our prime, and then gradually deteriorating until our enfeebled bodies will no longer sustain life. Of course some advance by more rapid strides than others, just as one man may run faster than another. Some children at five are as well developed as others at seven, and I believe that it is by the eruption of the first permanent molars that we are to judge of the completion of what we may call the first great physiological period of life. If all goes normally and well, "the six-year-old molars" should appear at six years, should pierce the gums without too great constitutional disturbance, should not be soft and carious, but firm and well formed, and the child should almost be unaware of their arrival. If all this happens, we may assure the parents that the child promises to grow up healthy, and may be now sent to school. Dr. Anstie, Dr. Day, and others have pointed out the evils of sending children to school too early, and putting upon the system, already taxed nearly to its utmost, the additional strain of study, confinement, and the bad air of the school-room. No young child should be urged or driven to study, and precocious children under nine or ten years of age should be held back rather than pushed forward.

If, however, the teeth are not normally erupted as to time, and are soft and perishable; if their eruption be attended with convulsions or other constitutional disturbance, the sign is as plain as a pike-staff that the child should be immediately put under a doctor's care. It is absurd and even criminal to attribute to the visitations of Providence what we have brought upon ourselves by our ignorance and folly. I ventured to assert above that the proper care of children during the first seven years of life has more to do with their subsequent health and development than any other factor, heredity alone excepted, and this, I believe, can be proved. It has not been proved upon a large scale, because it is not as yet possible to bring up large numbers of children physiologically. When, if ever, the flattering dreams of Mr. Edward Bellamy are realized, and individual life is merged in that of the community, perhaps children can be properly brought up. At that time the doctors will perforce become communists,—because there will be so little for them to do. Nature has given us in children's teeth a sign which we cannot afford to neglect.

I think it can be easily shown that many of the morbid conditions and diseases of adolescence are due to the second dentition. In addition to the distinguished American physicians whose names I have just mentioned, I can give a number of others who attribute serious and even fatal maladies to the second dentition. J. Russell Reynolds says that there is no doubt that epilepsy may be caused by the second dentition. Erb and Heine mention teething as a cause of poliomyelitis anterior and spinal meningitis, and many other writers speak in a similar strain. Dr. Louis Starr has recently published a paper in the *Therapeutic Gazette* on the diseases of the second dentition and their treatment. Several writers, among others Dr. Mulveany, of Brooklyn, have called attention to the association of hip-joint disease and the eruption of the first permanent molar teeth, the majority of cases of this complaint showing themselves between the fifth and seventh year. Dr. Mulveany asserted that he had never seen a case that did not begin during the period mentioned. He also gives some interesting cases of pseudo hip-disease in small children, all of them evidently too young to simulate the complaint. In one of these, so good a surgeon as Dr. Sayre is said to have been so completely deceived by the symptoms and history of the case as to have advised an exsection of the head of the femur and actually to have cut down with the intention of removing this part of the bone, only to find that the joint was in a healthy state.

The cases all recovered readily after the complete eruption of the teeth. Dr. Starr says that the anterior molars generally give rise to more marked disturbance than do any of the teeth that replace the temporary set.

What Eustace Smith calls "mucous diseases" are more generally due to the second dentition than to any other cause or causes. I quote Professor Starr in the following description : " In this condition there is a nervous flux from the whole internal surface of the alimentary canal, which mechanically interferes with the digestion and absorption of food and greatly impedes nutrition. It may be met with at any time during the eruption of the permanent teeth. The affected child is emaciated and weak. His face is pale, though subject to marked changes in color. At times a circumscribed crimson flush appears on one or both cheeks. Again there is so much pallor, particularly about the lips, that fainting seems imminent. The eyes are surrounded by bluish circles that deepen when the face pales: the conjunctivæ are muddy and there is occasional squinting. The skin is sallow, dry, and rough, and the hair lustreless and faded. There is decided pallor of the oral mucous membrane. The tongue is flabby, indented by the teeth, and glazed, and the breath is heavy and fetid. The appetite in the beginning fails, then becomes capricious, and finally is almost insatiable. Eating is followed by a sensation of drowsiness and by eructations of flatus and acid liquid. Tympanitic distention of the belly and pain are always present.

" Pain may be general when it amounts to a little more than a sensation of soreness, or, more frequently, it is limited to the left hypochondrium, and then is stitch-like in character. Either variety may be constant, or present only after meals ; in the former case there is temporary increase of discomfort after eating. Paroxysms of severe pain about the umbilicus, with great pallor of the face, are sometimes observed. Constipation of the bowels is usual and the evacuations which take place at intervals of two or three days are scanty and composed of small, hard, dark-coloured lumps with a quantity of mucus. By day the patient suffers from headache, is languid and ill-tempered. At night he is restless, grinds his teeth, starts from sleep in terror caused by frightful dreams, screams or laughs incoherently, and for a time seems unconscious of his surroundings. Somnambulism and nocturnal incontinence of urine are quite common.

" There is no alteration of the temperature, the pulse is feeble, and there is frequently a slight dry hacking cough, unquestionably due to reflex irritation of the larynx. The urine is diminished during the continuance of severe pain, but is voided in large quantities at the termination of the paroxysms.

"At intervals of two or three weeks violent vomiting and purging occur. During these attacks, which last from one to three days, a large quantity of mucus is expelled. There is slight fever, and the tongue becomes less flabby, more pointed, and covered with a thick, white, feathery fur, except along the sides, where several smooth, red, glazed patches of variable size and shape with irregular indented margins appear. The clearing-out process is followed by temporary improvement, but the symptoms slowly return and grow worse to culminate in another attack. The course of mucous diseases is very protracted, extending over months, and, while there is no regular progression, the symptoms tend to grow more and more serious as time lapses.

"Hacking cough, emaciation, and debility may suggest tuberculosis. A diagnosis, however, can be readily made by noting the state of the tongue, the mucous stools, the colour and condition of the skin, the absence of pyrexia, except in the attacks of vomiting and purging, the periodicity of these attacks, the diurnal drowsiness and nocturnal terrors, and the irregularity of the course. At the same time, the outset of the symptoms after the commencement of second dentition is a point of importance.

"Mucous disease is not dangerous in itself, though by reducing the strength it predisposes to other and much more fatal diseases."

In another place Professor Starr says, "Diarrhœa is a very constant attendant upon second dentition. It is most apt to arise in the changeable weather of spring and autumn, and again the general depression produced by the coming of the second teeth would naturally favour the development of any constitutional tendency; and, having traced the connection in several instances, I have no doubt that not a few cases of tubercular ulceration of the bowels owe something to this 'etiological factor.'"

I have quoted at such length because the above is a good, even a graphic, description by an eminent clinician and writer of a common complaint of childhood which is generally referred to almost any cause but teething, as, *e.g.*, worms, the approach of puberty, malaria, etc. Dr. Jackson wrote that, since having satisfied himself of the etiological importance of the process of the second dentition, he had almost given up the use of wormseed and other reputed vermifuges, because in his opinion most of the troubles imputed to worms were really due to something else.

A case is given of a boy of about twelve years of age who developed a chorea which lasted for several months and increased in severity; finally the lad fell into an epileptic fit. An examination of his mouth showed the gums over the second molars to be swollen and tender, and a free lancing of these finally relieved all of his symptoms. Fleiss gives a case of a small lad aged about five, who was preparing to cut his first molars; his anterior milk molars were lying half decayed in the gums, and near them were the edges of the permanent molars in a row. After a night of great feverishness, restlessness, and grinding of the teeth, the child arose in the morning with the left arm completely paralyzed. It was determined to extract all the carious teeth, in the hope of relieving the paralysis. However, the child was killed on the same day by an accidental fall upon his head. A post-mortem examination was held and showed, apart from the fracture of the skull, great congestions extending from the roots of the brachial nerves on the left side to the shoulder, neck, and face. "There appeared to be no doubt that dentition had produced this state of the veins." We should note in passing a curious symptom and its consequences. Irritation of the gustatory branch of the fifth nerve perverts or destroys the sense of taste. This nerve, being the one principally involved in the process of dentition, is already in a state of irritation. The loss of taste takes away or transforms the appetite. The want of food or improper food may in its turn bring on chlorosis or hysteria, and indeed any of the complaints due to improper nourishment of the nerves, a condition in young women usually ascribed to anything except the teeth.

Concerning the nervous disorders of the second dentition, at the risk of wearying you I will quote again from Professor Starr's paper. He says nervous disorders, both sensory and motor, are encountered. "Headache is common; the pain is usually temporal and unilateral. It may be scattered, however, in the occipital region or in different parts of the face, and sometimes shifts suddenly from the temporal to the occipital region. It is lancinating, more or less constant, with no distinct intermission, and during its continuance there are restlessness, anorexia, a frequent hard pulse, sweating, dilatation of the pupil on the affected side, and perhaps dimness of vision, diplopia, and colored or uncolored spectra. One or more painful points can often be detected, and generally there is a hard, tender, moderately enlarged lymphatic gland in the submaxillary or cervical region.

"These attacks are due to disordered vaso-motor innervation, depending upon irritation of the sympathetic nerves and producing irregular contractions or spasms of the vessels (the temporal or occipital artery as the case may be). The real source of irritation is to be found in the mouth. The mode of action may be twofold. First from a swollen gum or carious tooth. The lymphatic vessels readily convey irritating matter to a neighbouring lymph-gland, and the irritation here excited acts in its turn as a disturber of the sympathetic nerves, which furnish the vaso-motor supply to the carotid artery and its branches. This theory of the production of migraine has the value of the support of Lauder Brunton. The other method of production, and this I simply submit for consideration, is one of direct nervous connection, the sub-maxillary ganglion acting in the case of the lower teeth, and the spheno-palatine in the upper as the medium of transfer of irritation to the vaso-motor nerves. The motor disturbances, while not so common as the sensory, are more varied. Reflex spasm and paralysis of the eyelid have been noted. More extended paralysis also occurs. Dr. Brunton says, 'Sometimes, however, paralysis occurs of a much more extensive character, in consequence of dental irritation, especially in children. Teething is recognized by Romberg and Henoch as a frequent cause of paralysis, appearing in children without any apparent cause. According to Fleiss, paralysis of this sort occurs more commonly during the period of the second dentition, whereas convulsions generally occur during the first. Sometimes recovery is rapid, but at other times the limb atrophies and the paralysis may become associated with symptoms indicating more extensive disturbance of the spinal cord and brain, such as difficulty of breathing, asthma, palpitation, distortion of the face and squint, ending in coma and death.'"

Besides the intestinal catarrh, already noted in growing girls, catarrhs of the vaginal mucous membrane have occurred, and have led to serious charges against the purity of the patient and to much family unhappiness. Dr. Mulveany, already quoted, has given an instance in a girl of ten years, which disappeared upon *lancing the gums* and instituting the simplest detergent treatment.

The same author gives a striking instance of enlarged cervical glands due to cutting the second molar teeth and the ease with which the true cause of such affections may be overlooked. A lad of fifteen, apparently in good physical health, was brought to a dispensary with the cervical lymphatic glands in the left side of the neck enormously swollen. The surgeon who brought him desired the opinion of his colleagues as to the advisability of dissecting out the glands. After considerable discussion the patient having been examined by the other surgeons present, Dr. Mulveany inspected the mouth carefully and found that the upper and lower second molars on the affected side had not yet protruded and were irritating the gums. The boy thereupon volunteered the information that about a year previously the glands on the other side of his neck had been similarly affected, and that he had consulted some medical man who had cured (*sic*) him.

It is hardly necessary to add that the lad escaped a difficult and dangerous operation.

Many young girls show decided hysterical symptoms previous to the eruption of the second molars which are generally attributed to the approach of puberty. To the lay mind, at least, the approach of womanhood covers a multitude of pathological sins, and the allegation of this as cause of any symptom or set of symptoms is generally quite satisfactory. Braxton Hicks has pointed out that puberty is due to a slow development rather than a sudden change. The female genitalia begin their growth *in utero*, and it is rather that their complete development is announced by the amplitude and rounding of the figure than that the essential organs of womanhood spring into complete and perfect existence just at the time when the form is beautified and the menstrual function established. In other words arrival at puberty is only the completion of a stage of human development, just as the eruption of teeth is, and generally takes place shortly after the complete eruption of the second permanent molars. Indeed, it may be retarded or rendered painful and difficult by interference with dentition.

It is certain that cases of hysteria, chorea, and even epilepsy are cured by lancing enlarged and tumefied gums over advancing permanent teeth, and the assumption that the difficult or retarded menstruation is due to the disordered state of the system caused by dentition is more in accordance with acknowleged pathological facts than that the disordered state of the system is caused by the delayed menstruation.

Dr. Garretson remarks, in his Oral Surgery, that while dentition is a physiological process, still it is like that of utero-gestation, one of continuous irritation, While I readily admit that the disorders and disturbances of teething are not solely due to the formation and eruption of the teeth, and I believe them to be chiefly due to the perfecting of important physiological changes in the brain, stomach, glandular and osseous tissues, going on simultaneously with the eruption of the teeth, I assert, without fear of contradiction, that the normal and peaceful eruption of healthy teeth is our best visible criterion of the progress of these processes and of the healthfulness of the system, and, on the other hand, delayed and irregular eruptions of the teeth as surely evince some constitutional vice or evil hygienic condition.

Dr. Mulveany, from whom I have already largely quoted, cites a case of a young woman fifteen years of age, who had suffered for years with a catarrhal ophthalmia which finally readily yielded to treatment after twenty-eight permanent teeth had been cut, to be followed in a fortnight by a copious, offensive purulent discharge from the vagina accompanied by excoriations from the mons veneris to the anus, which naturally led to suspicions of unchastity. However, the simplest treatment cured the condition in a few days and the girl menstruated for the first time. Here was a case of catarrhal diathesis with local manifestations in the conjunctivæ kept up by the irritation of dentition, which persisted in spite of treatment until after the eruption of the second molars. The dyscrasia then showed itself in another region, provoked by the unusual activity of the uterus (about, one might say, to enter upon its life business); after the function of this latter organ had been established the vaginal catarrh disappeared.

It is doubtless true that many morbid symptoms really due to dentition are falsely ascribed to the approach of puberty in both sexes. It is not asserted that the former is all-important, or even more so than the latter. It is only claimed that as a factor in the production of the diseases of childhood and adolescence dentition has not received due recognition.

Any unused function is gradually lost. We use all our muscles too little ; our chests are narrow and our lung expansion small because we do not exercise our arms and our lungs enough. Our teeth are poor and our jaws narrow because we do not chew enough. Ambrose Paré spoke of a "rusty filth which attacked and destroyed the teeth and was chiefly due to the omittings of their proper duty—that is, chewing."

I asserted in the early part of this paper that proper care and food in the first seven years of life would, in my opinion, have more influence upon subsequent development than any other factors whatever, heredity alone excepted. Perhaps the statement was somewhat extravagant. Let us consider it. Of course, by proper care, I meant proper medical supervision of the child, and a thorough knowledge of the child's family history, so that the best measures might be taken to ward off the hereditary evils, which, like the evil spirits of which we read, are in constant attendance upon the helpless children, waiting to pounce upon them just as soon as some weakness or injury shall give the opportunity. Syphilis and tuberculosis leave their impress upon the children unto the third and fourth generation, but these tendencies can be successfully combated, even in the first, and it is our duty to study constantly all the conditions and all the signs of dyscrasiæ, of development, and of diathesis, that we may know what we have to combat, and may have our weapons ready and burnished. The demons of disease and ill health have fastened themselves pretty strongly upon unfortunate humanity, and the best-directed efforts are feeble enough against them. But that does not excuse us from the eternal vigilance which is the price of nearly everything worth having in this life. I think that it is Professor Peirce who has pointed out that the teeth can be altered and developed by proper exercise, care, and food. He alludes to the fact that the larvæ of the honey-bee are developed into a queen bee or into working bees, according to the nature of the food they receive. As to practical suggestions, I have purposely avoided discussions of the treatment of particular diseases as I have gone along, fearing to make my paper too long, and because the treatment of special conditions is unimportant compared to the hygiene of child life. Give a young child twelve hours sleep, plenty of sunlight, good air, and proper food containing plenty of phosphates, and he will develop that reserve of nerve-force which is needed to carry him through the emergencies of development.

Of the third period of our division a very great deal can be said. The hardships and vicissitudes experienced in getting the wisdom teeth and the general worthlessness of the product have engaged abler pens than mine, and I take it for granted that you are all more familiar with this part of our subject than with what has gone before, inasmuch as people suffering with their wisdom teeth are more apt to consult the dentist than the children and youth of whom we have just spoken ; and also because of the more obvious and immediate connection of various troubles and the eruption or non-eruption of the wisdom teeth. However, there are certain physiological facts connected with this process which are not so generally known and which may profitably take up our time for a few moments longer.

There are many cases of eczema and other skin disease, for example, which attack the young, and which are often incurable until after the eruption of the third molars. You are all familiar with the acne of young people which, commonly speaking, gets better and worse again during a period of years, but is finally cured after the completion of the second dentition. The connection of eczema with the eruption of the teeth is, like tooth-rash in the first dentition, more obvious, and it is probably more tractable to treatment when the irritation of teething is over than the acne.

The nervous diseases connected with the cutting of the wisdom teeth are even more pronounced than those that come earlier in life, and the reflex neuroses are at this time more marked. You are all probably familiar with some of the numerous recorded cases of complete blindness of one or both eyes, of deafness, of spasms, migraine, chorea, epilepsy, and insanity due to impacted wisdom teeth. Some of the functional disorders connected with the wisdom teeth are perhaps not so familiar. Dr. Anstie mentions a case of severe uterine neuralgia clearly found to be due to a carious tooth, which was not itself at all sensitive. A case of alarming uterine colic in child-bed was, after ineffectual treatment, found to be due to an unerupted wisdom tooth, and was cured by the free use of the lancet over this tooth.

A curious case of vesical irritability is recorded in which the patient experienced pain in the teeth upon assuming the erect posture, especially when the feet touched the floor on arising in the morning.

Dr. Garretson gives a case of severe pain in a lower biscupid tooth which was not relieved by extraction of the tooth, but was finally cured by curing an erosion on the inner surface of the fundus of the uterus. Hundreds of similar instances of reflex symptoms have been recorded. Dr. Mulveany says that he was frequently consulted by anxious young husbands because their youthful partners did not conceive. He always assured them that when their wives got through their teething they would have children, but that they were not likely to become mothers until quite over the infirmities of childhood.

I think that enough has been said to show that the eruption of the permanent teeth is by no means an unimportant process so far as it affects the health. Dr. Kingsley says that a perfect dental development is the result of well-balanced physical and nervous systems, without hereditary taint. "Abnormalities of development are due to disturbance of the trigeminal nerve during the period of the formation of the crowns of the permanent teeth. Neither lunacy nor insanity can have any direct bearing upon the development of the teeth, but would be most potent for evil if transmitted." The doctor continues:

"I do not hesitate to place it upon record that the next generation will see more of abnormality in dental development and an increase of nervous and cerebral diseases, and that the two are correlated and spring from the same cause, are not, strictly speaking, symptomatic of each other, but are associated and frequently have a common origin"

As dental irregularity is often accompanied by intellectual precocity, it may be said to be a sign of nervous excess in such persons.

As we glance backward over our subject we observe that the teeth of the permanent set which give the most trouble as they come through are those which do not replace milk teeth, *i.e.* the permanent molar teeth. Their eruption may then be said to resemble the eruption of the milk teeth, and so it does. Convulsions, diarrhœas, catarrhal diseases, etc., are more apt to show themselves with these than with any other of the permanent teeth. Of these teeth, also, it may be fairly said that they resemble milk teeth in being of softer consistency and more susceptible to caries than the rest of the permanent set. This is surely true of the first and third molars. Many theories have been advanced to account for the perishable character of the first and third permanent molars. Perhaps the first are poor because they are erupted so early, some claiming that they should not strictly be called permanent teeth, that they are a sort of link between the two sets, and that they should be extracted in time to make room for the third molars, which, it is claimed, would be good teeth if they had a chance to come through the gums promptly and easily, and could be kept clear and free from crowding.

This is a pretty theory, but scarcely a tenable one. Our jaws are small, our teeth poor and crowded, chiefly because we eat too highly-prepared foods, and do not exercise ourselves enough in chewing.

Our growth should be ever peaceful and regular. The constant talk about over-strain, neurasthenia, etc., only means that some one has sinned, either this man or his parents, and I judge it to be generally the latter, that he (or she) is born with "nerves." If we lay the foundation well for our children and teach them to avoid our mistakes in matters of hygiene we shall confer upon them benefits that wealth or learning cannot give. What I am constantly protesting against is the one-sided view of education that Americans entertain. We must educate—*i.e.*, draw out—the body and the mind; we must develop the chest, the arms, the backs, the jaws and teeth of our children, if we wish book-learning to be of any value to them or wish them to get any permanent good out of life or be of use in their day and generation.

Physical laws are God's laws, and if they are disregarded the punishment is swift and sure.

However, I am not one who takes a gloomy view of the physical future of the American people. I understood Professor Truman to say in your meeting last year that the teeth of our people are constantly growing better. I believe this to be true, and I believe that to our excellent and conscientious dentists much of the credit for this improvement is due.

When the laws of health are better understood, when the signs of a feeble constitution are more quickly read, when our people learn that building up and developing a normal body is really a simple thing, the Americans will become the finest race on the face of the earth.—*International Dental Journal.*

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

To the Editor of the "DENTAL RECORD."

SIR,—May I be allowed to make one or two remarks upon the case of hæmorrhage treated by tannic acid, which you gave as an extract from the *American Journal of Dental Science* in your last issue?

Dr. Roberts says that he was called to the house of a patient of his who was bleeding to death from secondary hæmorrhage, following the extraction of several teeth. In his own words, "Pulse was very weak, and she looked about ready to expire, but there was life, and upon inquiry I found that she had expectorated nearly one quart of blood." Evidently a very serious state of things.

Now for the treatment. "I immediately placed *three grains* of tannic acid in *one-third glass of water*." Assuming the "glass of water" to be the ordinary article which holds nearly half-a-pint, one-third would mean about three ounces, therefore Dr. Roberts made a solution of one grain to the ounce. Of this solution Dr. Roberts gave his patient *two teaspoonfuls* (equal to a quarter of an ounce, therefore containing a quarter of a grain of tannic acid) three times at intervals of five minutes, twice at intervals of fifteen minutes, and twice at intervals of half-an-hour, giving *in all* 1¾ *grains* of tannic acid in seven quarter grain doses spread over 1¾ hours.

Now Stocken gives the dose of tannic acid from 3 to 20 grains for a single dose, therefore I can only come to the conclusion either that Dr. Roberts is in error as to his quantities, or that the effect of tannic acid is very marked on "bleeders" *in extremis*, and this latter supposition I do not think is borne out by facts.

I may add that when tannic acid is given internally "its remote action is probably due to its conversion into gallic acid in its passage through the system" (Stocken), hence the latter acid is generally used for internal administration.—Yours faithfully,

WILLIAM RUSHTON.

THE DENTAL RECORD, LONDON: AUG. 1, 1891.

MANIPULATIVE TREATMENT AND DENTAL PATHOLOGY.

WE pointed out in a recent article that Dr. Reyfuss had adopted with some success what he has called "the application of massage in the treatment of dental pathological conditions." We have already offered some explanation of the way in which this mode of treatment probably acts, and it only now remains for us to indicate how and in what cases it should be applied. Of course success must vary according to the case, and while massage may prove wholly satisfactory in some instances, it may upon the other hand only act as an adjuvant treatment in other cases, requiring to be supplemented by other methods. According to Dr. Reyfuss, it is useful in all local disturbances of the circulation, and impairment of nutrition. Inflammatory states, periostitis, gingivitis, alveolar abscess and neuralgias are also benefitted by massage of the gums, and this method of treatment may be employed, whether the pathological condition is incipient, in an acute or chronic state. As one would expect from what we said concerning its mode of action, massage is of especial value in local congestions, and when local irritation exists. We believe that in many cases massage should be assisted by the use of frictions with liniments or ointments, the basis of which should be lanolin as being more easily absorbed than other excipients. In cases in which much local tenderness exists, the use of a weak cocaine ointment employed in association with massage gives excellent results. Again, in some diseases of the periodontal membrane Dr. Reyfuss recommends massage, insisting that at first the treatment must be gentle, but when the formation of pus is imminent we are told to adopt more vigorous measures with a view to hastening suppuration and lessening the adjacent congestion. In the later stage when the abscess has emptied, the healing process is expedited by massage. In chronic abscess the tissues having taken on a languid condition, it is often extremely hard to excite a healthy action and to restore tone to the parts, and here our new remedy proves itself very useful, as it restores circulation and expresses the morbid accumulation of lymph which sodden the tissues. It is said also to prove beneficial in that troublesome class of cases when an abscess has formed and evacuated leaving a fistula which in its turn has closed, but pain and tenderness still persist. In cases of true neuralgia due to local irritation, climatic changes, and generally when the nerve filaments are not too deeply situated massage will, we are assured by Dr. Reyfuss, exercise a most useful recuperative influence. Its *modus operandi* in these instances is said to be the same as when the nerve is "stretched," but whether this explanation will hold or not the relief obtained seems genuine enough. Dr. Reyfuss, whose extremely interesting articles in the *Dental Mirror* will well repay reading, has used massage in over two hundred and fifty cases, and has met with most satisfactory results.

We have delayed our present issue to be able to place before our readers a full account of the discussion on Anæsthetics, held at the meeting of the British Medical Association, at Bournemouth. The dental profession have had so much to say, not only to the very inception of modern anæsthetics, but to their progress, that we feel sure our readers will approve of our action. The use of nitrous oxide is, in England, regarded as the anæsthetic for dentists, especially in the larger towns; but in Scotland and in the country towns of England, chloroform is largely used in dental practice, so that a discussion in which the merits of chloroform and ether is the leading line, cannot but have a peculiar and lively interest for dental practitioners, and probably if, as we imagine will be the case, the newly appointed Committee invite the expression of the experience of the dental profession, our readers will be better able to assist, having read our report, than could otherwise be the case.

Dental News.

BRITISH DENTAL ASSOCIATION. — President, J. T. Browne-Mason, L.D.S.Eng.; President-Elect, J. Smith-Turner, M.R.C.S. L.D.S.Eng.; Vice-Presidents: Sir Edward Saunders, F.R.C.S.; Sir John Tomes, F.R.S., F.R.C.S., L.D.S.Eng.; Dr. John Smith, F.R.C.S.Edin.; President of the Representative Board, F. Canton, M.R.C.S., L.R.C.P.Lond., L.S.A., L.D.S.Eng.; Vice-President, W. B. Macleod, L.D.S.Edin.; Treasurer, W. H. Woodruff, L.D.S.Eng. The Annual General Meeting of the Association will be held in the Examination Hall of the Royal Colleges of Physicians and Surgeons, Victoria Embankment (adjoining Waterloo Bridge), on Thursday, Friday and Saturday, August 20th, 21st and 22nd, 1891. On Wednesday, August 19th (the evening before the meeting) the President-Elect and Vice-Presidents of the Association will hold a Reception of Members and Ladies at the Whitehall Rooms, Hotel Metropôle (entrance, Whitehall Place), from 9 to 11.30. Order of Proceedings—Thursday, August 20th, 9 a.m., Meeting of the Representative Board in the Council Room of the Examination Hall. 10.30 a.m. The Annual General Meeting for business (open to Members only) will assemble in the Theatre. At the termination of the Association business the meeting will be open to visitors, and the President will give his valedictory address. Mr. J. Smith Turner, the President Elect, will then take the Chair and deliver his Address. Papers will afterwards be read and discussed. *List of Papers Promised*:—"On the Use of Fusible Metal in Mechanical Dentistry" (with Demonstrations), by Mr. R. P. Lennox. "Dall's Method of Preventing Anterior and Lateral Movements in Artificial Dentures in Edentulous Cases," by W. Bowman MacLeod, L.D.S.Edin. "Oblique Rooted Teeth" (with Lantern Illustrations), by W. B. Pearsall, F.R.C.S.I. "Observations on the Teeth of School Children," by R. Denison Pedley, M.R.C.S., L.D.S., F.R.C.S.Edin. "On a Proposed Change in the Dental Examination," by G. G. Campion, L.D.S., Eng. "Higher Dental Diploma," by J. M. Ackland, M.R.C.S., L.D.S.Eng. Casual Communications will be received after the papers should time permit. 1 p.m., Adjournment for Luncheon.

2.30 p.m., Reading and Discussion of Papers. 5.30 p.m., Adjournment. 8.30 p.m., Conversazione by the Odontological Society at the South Kensington Museum. Friday, August 21st: 10 a.m., The Annual Meeting of the Dental Benevolent Fund, in the Theatre of the Examination Hall. 11 p.m., Reading and Discussion of Papers continued. 1 p.m., Adjournment for Luncheon. 2.30 p.m., Reading and Discussion of Papers continued. 5 p.m., Adjournment. 6.45 p.m., Annual Dinner of the Association in the Whitehall Rooms, Hotel Metropôle. (Dinner Ticket is One Guinea, inclusive of Wines.) Saturday, August 22nd.:—10 a.m., Demonstrations at the Examination Hall. 1 p.m., Luncheon. A Garden Party will be given to Members and Ladies by Sir John and Lady Tomes, at Upwood Gorse, Caterham, Surrey, in the afternoon. A special train will leave Charing Cross at a time to be announced. The above arrangements of the business may have to be altered, according to the time at the disposal of the Committee. *Special Notices:*—No cards of invitation will be issued by the President and Vice-Presidents for their Reception, and for the Garden Party by Sir John and Lady Tomes, and only those Members will receive Tickets who reply to the printed Post Card issued to all by the Honorary Secretary. The London Members will entertain the Provincial Members and Ladies at Luncheon, at the Hotel Metropôle, on Thursday, Friday, and Saturday, and will also provide a Special Train to convey the company to and from the Garden Party at Caterham. The Luncheon and Railway Tickets to be obtained of the Secretary, at the Office in the Examination Hall, from whom also Dinner and extra Luncheon Tickets can be obtained on payment. *Notice to London Members:* — Only those who have subscribed to the Guarantee Fund will be entitled to Luncheon and Railway Tickets. Special Entertainments will be provided for Ladies accompanying Members, notice of which will be given later on. Dental Instruments and Novelties in Dentistry will be exhibited by the various Dental Depots. A new Dental Chair will be shown by Mr. A. S. Walsh, and a Mechanical Laboratory Bench by Mr. T. Headridge.

W. B. PATERSON, F.R.C S., L.D.S.Eng.,
Honorary Secretary.

THE DENTAL RECORD.

VOL. XI. SEPTEMBER 1st, 1891. No. 9.

Reports of Societies.

THE BRITISH DENTAL ASSOCIATION.

THE Annual Meeting of the British Dental Association took place in London on the 20th, 21st, and 22nd of August. The first meeting was held at the Examination Hall of the Royal Colleges of Physicians and Surgeons on Thursday, the 20th inst.: Mr. BROWNE MASON, President, in the Chair.

The Treasurer (Mr. W. WOODRUFF) read his report, which stated that on the whole the year had been a prosperous one.

The SECRETARY read the Annual Report, which stated that there had been no break in the steady progress of the Association that had characterised its previous record. Amongst the incidents of the year were mentioned the successful prosecution of various offenders against the Dentists' Act, and the decision of the Medical Council relative to Clause 37 of the Dentists' Act. The question of direct representation of dentists on the Medical Council had been before the Board and no effort would be wanting on their part to realise the legitimate aspirations of the profession in that important matter. Another important incident referred to in the report as a matter of congratulation was the formation of a Metropolitan Branch. It was stated that some of the statistics in the report of Mr. Fisher of Dundee upon the condition of the teeth of school-children had been already utilised in the recent Congress on Hygiene and Demography. In conclusion the Executive congratulated the Association on the hold it is taking on public attention, and on its Annual Meeting being held again in London, and trusted that the members might look forward with unabated confidence to the next Annual Meeting in Manchester.

On the motion of Mr. W. B. BACON, seconded by Mr. G. BRUNTON, the reports were adopted.

The Members of the Representative Board were then balloted for.

Mr. BRUNTON proposed and Mr. RENSHAW seconded, that the next Annual Meeting be held in Manchester, with Mr. QUINBY as

President. This was agreed to, and it was adopted that the Meeting next year should be held on the 11th, 12th and 13th of August.

The retiring President, Mr. BROWNE MASON, after tendering his thanks to the Association for the high honour conferred upon him in being selected as President and for the loyalty shown in the difficulties that beset the chief for the time being of a large society like that, said that with the able guidance of the permanent officers of the Association he passed on the office to his successor with the modest hope that the post had not lost dignity at his hands, and that the lustre of the Association was in no way diminished through any sin of omission or commission for which he was responsible. The reports of the Secretary and Treasurer had placed before them the work of the Association for the past year, which had been marked by steady progress. Their number had increased, and with that their influence, which had recently made itself felt for good with the General Medical Council, more especially in terminating the action of Clause 37 of the Dentists' Act, which provided that it should be lawful for the General Council to dispense with the certificate examination, or other conditions required for registration, in favour of any dental students or apprentices who commenced their professional education before the passing of the Act. This was a matter of great congratulation, for it was full time that no more concessions should be made to men who claimed to have commenced their professional education before 1878 if they had not in thirteen years acquired a right to their place on the Register. The door remaining open as it did gave the greatest facilities to the insertion of names by fraud, and now, at all events, no one could get placed thereon without the fulfilment of the dental curriculum. That action on the part of the Medical Council was certainly to be placed to the credit of the pressure from time to time brought on them by the Association. The year had also been marked by the formation of the Metropolitan Branch, which in the future would doubtless be the means of keeping the usefulness of the Association more prominently before the London members. The new branch had had the honour of having Mr. C. S. Tomes as its first president. Amongst the subjects of interest in the year's occurrences he noted that the Dental Association of Victoria had held its first annual meeting. They might well hail this with pleasure, and rejoice that their professional brethren at the Antipodes had found the Association a model for the organisation of a similar one for themselves. He hoped that the new Association would eventually be affiliated with the British Association, and thus extend their joint influence. Referring to the presidential address of last year at Exeter, and to the exceeding able and exhaustive paper read by Mr. George Campion on the need of a higher qualification in dental surgery, he expressed the hope that no further, or special diploma would be inaugurated, as he did he not think the multiplication of diplomas advisable. Everybody was now cognizant of the meaning of the L.D.S. after a practitioner's name, and so long as the Royal College of Surgeons and the other medical and surgical licensing corporations held efficient and searching examinations as to the fitness of the student to practise dentistry they might well be content with their diploma. If the examinations were not searching enough there need be no difficulty in perfecting them, and the fact of the non-success of 50 per cent. of the men who presented themselves for examination last June quite answered the question as to the thoroughness with which the examiners entered upon their work. He did not argue against taking additional qualifications. If the student had the requisite time at his disposal by all means let him take the conjoint diploma, but the L.D.S. should be, *par excellence*, the dental diploma, and no one should, in the future practice of dental surgery, be without it. Mr. Campion maintained that if the higher qualification were granted a stimulus would be imparted to the teaching of the various dental hospitals, but that was being done as the L.D.S. was made more comprehensive and searching, and would be done to a greater extent if it were raised to the level of the proposed qualification, whose cause Mr. Campion had so ably championed.

In concluding his address he drew attention to the claims of the Dental Benevolent Fund, and appealed to the members of the Association to become subscribers. He could as a member of the committee speak as to the touching nature of the cases brought forward from time to time, and also of the excellent way in which they were inquired into before relief was administered.

On the motion of Mr. Lee Rymer a vote of thanks was carried by acclamation to the retiring President for the manner in which he had filled the chair during the past year and for the interesting address he had delivered.

Mr. J. SMITH-TURNER, the President for the ensuing year, then took the chair amid loud applause.

THE PRESIDENT, in his inaugural address, said he desired to make a few remarks on the subject of the deterioration of the human teeth and its causes. People, he said, were lavish in their waste of teeth. They seemed to think that their complement of thirty-two was inexhaustible, and parted with them on the slightest provocation. The mouth was the happy hunting ground of every charlatan who had a nostrum to palm off upon a greedy public. If we had fewer teeth to begin with, perhaps we might finish with more. But why should teeth in the first instance be incapable, the enamel breaking readily, and the dentine being susceptible of rapid destruction? This was an indication of the struggle for existence and a deficiency of earthy salts. The teeth, unfortunately, were at a disadvantage as compared with the bones. The supply of blood to them was smaller, and they had not the same facility of nourishment as was accorded to the common bones of the skeleton. All bones had centres of development, more or less numerous according to their anatomical or physiological necessities, and those centres had their layers of formative blastema in perpetual activity. When the ordinary conditions of nutrition were disturbed, or when the primary essentials of nutrition were absent, the teeth were therefore more likely to suffer in stability. If the teeth received less of the earthy salts while they required more they were sufferers in a still greater ratio than if the demand in each case were equal. The brain was also another competitor with the teeth for sustenance, and it was far more likely to appropriate its full share of the phosphates than were the teeth. Again, each tooth being a terminal point of circulation it received but a small supply of blood, and was therefore likely to suffer from any diminution of the normal quantity of its nutritive pabulum. He was inclined to blame the liberties taken with nature for much of the dental distress now existing. So far as the human constitution generally was concerned, great latitude might be allowed in ordinary diet, but in the case of the teeth there was not the same opportunity of recovering from a course of injudicious feeding. It was very certain that the teeth of drugged children suffered terribly. Children, too, were hurried through the earlier stages of their lives, and manufactured into priggish little men and women. Home-made foods were out of date, and the true needs of the system were not satisfied. The process of preparing flour and bread tended to eliminate the earthy salts which were so essential to the teeth, and tinned and preserved fruits were but a poor make-shift for the fresh vegetables and fruit which they had replaced. Fish also had become a luxury instead of a staple article of food. The brain was thus unduly stimulated, taking more than its share of the phosphates from the circulation, and so starving the teeth. He deprecated, moreover, the cruel method of punishment of children by depriving them of food, and protested against the unfairness of expecting children to use cold water in brushing their teeth during the winter season. The President then referred to the early history and the present position of the Association, making special allusion to the Benevolent Fund. The legal and political object of the existence of the Association had been, he said, apparent in the Law Courts, where they had had to gather experience and receive a somewhat rough education. Referring to the formation of branches, he said that they conferred great advantages on the profession at large, as well as on their individual members. It was not, however, intended by the formation of branches to weaken the power of the Association as a corporate body. No doubt, branches might become a source of weakness to the Association. That was a great power to possess, and the responsibility attaching to its possession was proportionately great. It should also be borne in mind that the executive had not alone to consult their own will or wishes, but to listen to and study the wants of the Association as a whole, and to consider the best means of meeting them. It was unworthy of any member of the Association to try to force or entrap it into any course of action which it had not thoroughly considered, and it was unwise of members to treat their representatives as mere deputies sent to register their will. Both the representatives and the officials of the Association should be trusted, having been chosen because they were considered fit to guide the affairs of the Association. He hoped that the rough work of the Association was now over. They had yet to build up a professional reputation. He did not wish to stifle free discussion, but unless discussion could be carried on with a full knowledge of facts and conditions, it was worse than useless. He had a deep desire for the welfare of his profession, and a firm belief in the future of the Association, but he wished to remember the advice of the cautious Frenchman who deprecated "a little too much zeal." He had also learned to know that the hope which was borne of vain boasting and of big words was doomed to disappointment.

Sir JOHN TOMES moved a vote of thanks to the President for his admirable address. This was seconded by Dr. SMITH and carried with acclamation.

The meeting then adjourned.

The adjourned business meeting in the afternoon was presided over by Mr. Browne-Mason.

After the result of the ballot for the Representative Board had been declared, Mr. Redman moved a resolution, "That no person keeping a shop and carrying on trade therein shall be eligible for membership of the British Dental Association." Dr. Walker seconded the motion. A prolonged discussion followed, several amendments being proposed, but ultimately the resolution was carried.

Mr. Morton Smale proposed that the first report of the School Committee be received.

The motion having been seconded, Mr. Cunningham protested against such treatment of the report. He asked for some definition of what was meant by the report being received. If it meant that the School Committee were not to be heard on this very important question, he called upon every member with any feeling on the subject to protest. He would move as an amendment that it be provisionally received, and that it be put down for discussion at whatever time was convenient. His desire was to have the report discussed.

The amendment was seconded by Mr. King and carried, after which it was resolved, "That the report be received, and an opportunity for discussion be given during the present meeting."

Mr. George Cunningham moved, "That this meeting of the British Dental Association is of opinion that the renewal by the Lords Commissioners of the Admiralty of their contract with the Dental Hospital of London is an irrefutable proof of the value of dental services to Her Majesty's Navy, and that as the experimental arrangement has now been sufficiently tested the services of fully qualified dental practitioners should now be engaged, not only in connection with the London recruiting depots, but at all other recruiting centres." The State, he said, would only be consulting its own interest by availing itself of the services of dental practitioners, since the Naval Medical Department, as now constituted, made no other provision than extraction for the treatment of so prevalent a disease as dental caries. In December, 1885, the Admiralty entered into a contract with the authorities of the Dental Hospital of London, by which the latter undertook the dental treatment of such recruits as might be referred to them during one year, and as a consequence 34 mariners and 14 boys were so treated. The Recruiting Department was thus enabled to add that number of efficient candidates, who would otherwise have been rejected. In 1888 the number of recruits thus rendered efficient was 262. That, surely, was a practical proof of the kind of service which dentists could render to the State, but was it fair on the part of the State to avail itself of the advantages of a purely charitable institution, mainly established and upheld by the donations of the dental profession, instead of employing the services of fully qualified dental practitioners? The contract with the Dental Hospital was all very well as an experiment, but it had been sufficiently tested. Its continuation was a manifest injustice to an honourable profession, and he believed that the members of the Navy and Army Medical Departments would be the first to appreciate the unfairness of it. It was, therefore, difficult to conceive what justifiable grounds the Lord Commissioners of the Admiralty had for saying, "Their Lordships are advised that no benefit would accrue to the recruiting of men and boys for the Navy by the adoption of this proposal, and that the arrangements at present in force provide for all the requirements in the matter." It was perfectly certain that at the present time the Admiralty were continually taking men and boys into the service with decaying teeth. Why should they do so when such teeth were capable of being saved and made strong and efficient masticators? The arrangement now existing was entirely due to the enlightened and far-seeing action of Sir Anthony Hoskins, aided by the sympathetic support of Colonel Welch. The difficulty of the Recruiting Department in obtaining men and boys of sufficiently good physique was well known, and 20,000 additional men must be added to the present effective strength of the Navy. The more economic plan was to employ the services of qualified dental practitioners to increase the number of available recruits. A dentist attached to an industrial school would do more to increase the chances of the boys' enlistment than even the bandmaster, and the initial expense would probably be less.

Mr. CAMPION seconded the resolution.

Mr. SMITH-TURNER objected to the resolution. He considered that the treatment of some thirty cases was very slender ground on which to base such a strong resolution.

The TREASURER said a gentleman of considerable position at the Admiralty had written to him, "I have seen the Director-

General on the subject we discussed. He tells me the Admiralty are quite aware of the importance for our seamen of dental professional attendance, but the main difficulty is money. However, it is something to know that the matter is engaging their attention, and I will try and get some of the Admirals I know to take it up."

Mr. BOOTH PEARSALL thought the Association, by adopting the resolution, would be rather going out of its way to dictate to a great national service.

Mr. W. M. FISHER supported the resolution. He thought that possibly the object might be gained by raising the question in the House of Commons on the Naval Estimates.

Mr. C. S. TOMES objected *in toto* to the resolution, because if they passed it they would be patting themselves on the back.

Mr. WALTER H. COFFIN proposed as an amendment, "That this meeting of the British Dental Association records its gratification at the renewal of the contract with the Dental Hospital in London and the Lords Commissioners of the Admiralty."

Mr. MORTON SMALE preferred that the name of the Dental Hospital should be entirely omitted from the consideration of the subject.

The word "contract" in the amendment having been altered to "arrangement," on the motion of Mr. FRIPP, it was decided to proceed to the next business on the paper.

Mr. MORTON SMALE moved, "That on and after January 1st, 1893, no person should be elected a member of the British Dental Association unless he holds a qualification registrable by the General Medical Council of Education."

The motion was seconded by Mr. W. H. WOODRUFF, but after considerable discussion, in which Dr. Stack, Mr. Macleod, Mr. Waite, Dr. Balkwill, Mr. Cocker, Mr. Naylor, Mr. Fripp, Mr. Smith-Turner, Mr. Harding, Mr. Lachmore, Mr. W. Nicol, Mr. J. Stocken took part, an amendment was agreed to, "That this meeting of the British Dental Association disapproves of any endeavour at the present time to curtail the entry of registered dentists to the British Dental Association."

This concluded the business meeting.

The next paper was by Mr. W. B. PEARSALL, on OBLIQUE ROOTED TEETH, who exhibited many specimens and models. The following is an abstract: Brief note of causes directing the attention of the author to this abnormality of the roots of the first and second upper molar teeth first observed in 1866.—Difficulty of diagnosis, fractured specimens, from unusual resistance and from forceps not fitting the necks of teeth.—Normal molar roots represented on section by an isosceles triangle, abnormal or oblique molars by scalene triangle, characteristics of both classes of oblique teeth.—Reason for name of this type of abnormal teeth.—Best method of extraction.—No reference to this abnormality as adding another difficulty in extracting teeth, in dental literature.—Specimens observed in Royal College of Surgeons' Museum in Edinburgh, and Trinity College, Dublin.—Collection of specimens formed by the author, making over fifty specimens, twelve specimens shown in Museum of Dublin Meeting of B.D.A. in 1888.—Cast of jaw, showing type of tooth *in situ*, with natural teeth recently extracted by the author.—Possibility of diagnosis by observing anterior buccal root.—No statistics.—Measuring instrument.—Conclusion.

Mr. C. S. TOMES thought it was of importance that this form of abnormality should be recognised from a practical point of view, and probably it had some importance from a practical point of view. Very little was known about the roots, and his own belief was that a careful study of abnormalities of roots of teeth might teach them much more than they knew at the present time. There was a sort of tendency for the roots to be twisted round one another, but what it meant he did not know. That it meant something, however, its frequent occurrence undoubtedly indicated.

Mr. BRUNTON said he had in his possession two pairs of upper molar forceps, made for him in 1869, which enabled him to deal with oblique-rooted teeth.

Mr. DENNANT thought there was a great absence of instruments suitable for dealing with this particular kind of teeth, and he hoped that manufacturers would soon be able to give them better instruments.

Dr. WALKER said that such abnormalities were quite frequent.

Mr. HEPBURN said that the difficulty of removing these teeth was recognised long ago by practitioners. No forceps with a fixed joint would adapt itself to all the various forms of obliquity, and the teachers at the Dental Hospital used to advise the use of the old loose-jointed forceps.

The next paper was by Mr. R. P. LENNOX, on

FUSIBLE METAL, OR NEW USES OF AN OLD FRIEND.

In crown work he said the metal might be used to make a mandrel for shaping the ferrule as a setting for a natural tooth, to be used as a die for striking up crowns, as a means of obtaining an extremely well-defined and not readily damaged cast of the mouth when a tooth was to be pivoted. The mandrel was to be obtained as follows: a thin strip of copper in the form of a portion of a flat ring was formed into a ferrule with plane edges and a flaring top, by placing the strip about the root to be crowned, grasping the ends with a pair of pliers, and drawing them together until the lower edge took accurately the form of the root a little under the gum margin. The ferrule was then soldered, replaced on the tooth, lightly filled with wax, and an impression was taken in A1 composition. The impression being removed from the mouth the ferrule was completely filled with wax. Half an ordinary brass pin was thrust head downwards into the wax towards the buccal side of the ferrule, and a model was cast in plaster. The wax was then removed, exposing the pin, and a small depression was cut in the plaster within the ferrule towards its lingual side. The mandrel was then made by melting fusible metal into the ferrule with the blow-pipe. The paper also described how the metal might be used in striking up crowns, in forming a model in pivoting, and in the repair of vulcanite plates. Necessity would, no doubt, in due time, suggest other uses for the metal.

Mr. COXON asked what were the comparative weights of the composition.

The PRESIDENT said he thought the favourite formula was equal proportions of tin and lead, and as much bismuth as both.

Mr. W. BOWMAN MACLEOD then described "DALL'S METHOD of PREVENTING ANTERIOR and LATERAL MOVEMENTS in ARTIFICIAL DENTURES in EDENTULOUS CASES." He said the method was a very simple one. It was following up the experiments which had been made in re-plantation, in-plantation, and transplantation. While these processes had been occasionally successful, they had for the most part had only a temporary duration, and were more fitted for experimental work than for regular practice. The cause of failure was that they converted the roots into a foreign body, which was an organic material. The success which he believed would follow Dall's method was due to the fact that they would make use of an inorganic body in the socket.

Mr. NICOL said he had made a few experiments in this mode of working with varying success. Placing the pivots immediately after extraction he had more success than when he drilled into the alveolus. In one or two cases there had been rather an amount of irritation which obliged him to cut the pivots off. The process was extremely useful in the case of lower sets, where the patient was perhaps entirely dependent upon one tooth for retaining the plate in position. If the tooth was extracted and the pivot put in immediately, it might be done with great effect.

Mr. E. LLOYD WILLIAMS said he had seen a large number of cases where the socket in the soft tissue had distinctly remained as an assistance in keeping up the plates. He had experimented in a few cases, and he considered that Dall's method was distinctly advantageous. He strongly protested, however, against drilling into the bone. He believed that this practice was unscientific and impracticable, and opposed to all that was known of surgery.

Mr. BIGGS strongly recommended gentlemen to be very cautious in carrying out such experiments.

Dr. CAMPBELL also condemned experiments on such a subject.

Mr. MACLEOD, in reply, held to the opinion that Dall's method was a practicable one, and would occasionally be found of great service. He did not mean that it was one for every-day use. It was only to be resorted to when other methods already known to the profession had failed. He denied that the method was opposed to all the known principles of surgery. If nature remained natural and healthy there would be no occasion for surgery. Nature tolerated the presence of foreign bodies very well indeed, such as gun shots, so long as they did not interfere with any function. The plate did not remain in any longer than in the case of an ordinary denture. He held that as a general rule they could put in a denture, either partial or entire, while the patient was still sitting in the chair, and before the bleeding resulting from the extraction of the tooth had ceased.

Dr. DUDLEY BUXTON then read a paper upon

"THE CHOICE OF ANÆSTHETICS IN DENTAL SURGERY AND FOR OPERATIONS ABOUT THE MOUTH.

He said that they had to determine the best anæsthetic for ordinary straightforward cases and also for cases which presented more or less danger and difficulty. They had to bear in mind that such dangers and difficulties might arise from the operation, from the state of the patient's health, or from the difficulty of the way in which the anæsthetic was given.

In every case the amount of risk run must be proportional to the gravity of the operation. Thus, for a trivial surgical procedure it was manifestly wrong to subject the patient to a risk from the anæsthetic which might jeopardise his life. For ordinary cases he (Dr. Dudley Buxton) was quite sure that nitrous oxide was the most useful, efficient, and sufficient anæsthetic in dental surgery. Its safety had at one time been impugned upon the score of its reputed action as an asphyxiant, and even recently this view had been resuscitated, being based upon experiments which, however, were fallacious. He had shown conclusively that nitrous oxide exercised its action by dint of intrinsic anæsthetic properties, and not on account of the mere coincident deprivation of oxygen, and he reminded the meeting of the proofs he had before advanced in support of his conclusions. Much of the blame which was brought forward against nitrous oxide was to be accounted for by the fact that many persons were afraid to push the gas to the point of its physiological action.

In passing to the cases in which a more prolonged anæsthesia was required than nitrous oxide could afford, Dr. Dudley Buxton urged that ether, when properly administered, was the best substance to use. Chloroform had its place, and was a most valuable anæsthetic, really an "ideal" if only its danger could be eliminated, but unfortunately that peril could not be lost sight of, and, indeed, the sad death of one who had devoted himself to the study of anæsthetics, and whose loss they were even then deploring, had only recently enforced that fact upon their minds. Many had sought by positive statements to compel a faith in the safety of chloroform, which a more thorough knowledge of the matter deprecated. On the experimental side the authorities differed widely in their conclusions, and upon the clinical side the results of European and American surgeons were totally at variance with Surgeon-Major Lawrie's remarkable list of cases. He felt sure the meeting would agree with him when he urged that chloroform should never be employed in the routine practice of dentists, and only in such exceptional cases as when ether could not be used. The induction of anæsthesia by local agents was also dealt with, and it was stated that the consensus of opinion went to show that the use of cocaine did not give satisfactory results and was by no means free from danger. The recently vaunted use of electricity was also apparently a failure, at least its adherents were few and did not seem anxious to publish its merits.

Mr. G. H. BAILEY concurred with Dr. Dudley Buxton, and was pleased to find he corroborated the views which he (Mr. Bailey) had held for many years. He had hoped it was unnecessary to tell dentists not to use chloroform, its danger was certainly great, and he had given up its use in dental practice for many years. He thought, however, it must be employed for "operations about the mouth" which he saw were included by the title of Dr. Dudley Buxton's paper.

Dr. DUDLEY BUXTON, in explanation, said he regretted to have to say that dentists and surgeons even now were in the habit of using chloroform for dental operations, and he had made his statements very positive because he felt such a practice should be stopped, and he urged that dentists should, in every case in which a surgeon proposed to give chloroform for a patient whom he had brought to the dentist, absolutely refuse to allow such a thing to be done. With regard to chloroform in oral surgery, he must tell Mr. Bailey that, owing to the exigencies of time, he had not been able to take up the subject of the choice of anæsthetics in operations about the mouth, but had he been able to do so he should have shown that by a method he had used largely of late he had been able to give ether in these cases by rectal etherisation, and had quite recently etherised a patient, per rectum, while Sir Joseph Lister removed the tongue. This showed that even in all operations about the mouth chloroform was not absolutely necessary.

Dr. W. R. GRAVES described a CASE OF TUBERCULOSIS OF THE PALATE. The patient first visited the Dental Hospital in Dublin, but was transferred to the City of Dublin Hospital, where he was injected with tuberculin, and ultimately recovered. There was absolutely no history of syphilis, and the affection of the palate was clinically of the nature of tuberculosis.

Dr. BAKER said he saw the case, and could testify to the very marked re-action that took place.

Dr. DUDLEY BUXTON said the whole value of the case rested upon the question of diagnosis. He did not gather from the paper whether Dr. Graves had made such an investigation as would prove the presence or absence of the bacilli of tuberculosis in the ulcer he was dealing with.

Mr. C. S. TOMES asked if the temperatures were taken at regular intervals, so that they might be sure that the elevation of temperature was actually due to the re-action after the injection.

Dr. STACK thought that the case showed that a fair knowledge of what is going on in the bacteriological world was a great desideratum for the dentist.

Mr. ACKLAND said he saw twelve or thirteen cases of injection with this fluid at Exeter, but they were all failures except in the case of lupus of the soft palate.

Dr. GRAVES, in reply, said he agreed that the diagnosis of the case was all important. It was the hardest thing in the world to get tubercular bacilli from the pus of the ulcerated surface, although they were easily obtained from the sputum. The temperatures were taken every second hour for all patients under Koch's treatment. The patient in question had no other disease. His maximum temperature was reached ten or twelve hours after the injection.

In reply to the President, Dr. Graves said he had not yet made up his mind as to the value of Koch's system, but he thought that at the present time they had no such powerful therapeutic agent as tuberculin. Still, it must be used with judgment and care.

Mr. W. M. FISHER read the next paper on

"COMPULSORY ATTENTION TO THE TEETH OF (A) SCHOOL CHILDREN, (B) ARMY AND NAVY RECRUITS."

He recommended that, to carry out the resolutions passed at the Brighton Meeting, the fathers of the profession might do a great deal by moral suasion exercised on directors of schools. When the respective Branches of the Association induced the directors of institutions to have conservative attention paid to the teeth of school children then might the British Dental Association hold up its head in the face of the nations as having truly fulfilled one of the greatest objects of its being. Mr. Fisher then reviewed the actions of the Sub-Committee appointed at the meeting of the Representative Board held on November 30th, 1889. He was a member of that Committee, but he had not been in full harmony with it in its actions, as he considered it had done much to arrest and trammel the legitimate growth of the subject by issuing a far too complicated set of instructions, which to him were little short of a code of hieroglyphics, to go to the Branches with. The object of the tabulation was to gain data to lay before the directors of the schools, so that they might know the condition of the teeth of the children under their care. It never was his remotest dream that a committee of co-workers would ask their colleagues throughout the country to tabulate such points as "temporary tooth lost," "permanent tooth not erupted," "tooth extracted," "tooth with fistula," &c. There were at least twelve unnecessary questions asked in what purported to be a guide to the Branches. They had been flying at the moon and courted defeat, and the directions as issued seemed to him to be attempting the impossible, leading only to disorder rather than on the right line of progression. The report on this subject was a sort of monument of much misapplied industry. To take cognisance of a school with an appointed dental surgeon, such as the Metropolitan and City Police Orphanage, was outside the spirit of the enquiry. He recommended the formation of an Army Committee, to be drawn from the 14 Head Quarters and the Home Military Districts. That Committee would sit on the subject and receive minor reports which would keep the question always to the front. He thought that probably they would be able to carry conservative dental measures in the Navy earlier than in the Army.

Mr. CUNNINGHAM said that in the books that were issued there was no provision for the number of teeth which had been actually extracted, and it was important that they should know the number. It was important to notice in a school of 186 infants only three had sound dentitions. There were marked differences. In general, there were 25 per cent. sound temporary dentitions, and in a special school near Leeds, only 1·6 per cent. The statistics did not show that the female sex was any more liable than the male sex to have decayed teeth. The diagrams which had been prepared showed very clearly that there was no difference with regard to sex, and therefore, for the purpose of tabulation, sex had been ignored. Then, again, it had been found that the right and left sides of the mouth were practically symmetrical. A very great difference exists between the upper and lower teeth in their liability to caries, even in molars, but more especially in the front teeth, as shown in the diagram. The body of the report had been written some time ago on the basis of what might be termed the first tabulation. Since then they had had a certain number of other books sent in, and therefore he had endeavoured to embody a good many things in foot notes. In certain localities they had a very large percentage of decay of the permanent teeth. For instance, if they compared a school at Leeds with one at Stockton-on-Tees, they would see that the difference was enormous. His impression was that an examination would show that the higher class schools were worse so far as teeth were concerned. One column in the tables showed that the effect of having a dentist attached to a school was to reduce the number of defective teeth from 197 to 117. Edinburgh had not been put into one column, all massed together. It was well known that that city was noted for its scholastic institutions. Donaldson's Hospital was recruited from a lower class than John Watson's Institution, and it was interesting to note that at the same age the ratio of defective teeth was less in the former than the latter. Good service had been done in both schools by a considerable proportion of the teeth being saved.

After having read the returns he was surprised to find so many clean teeth in schools where the tooth brush was not used. Why was that? It was because they used the teeth, and probably were provided with tough meat from the cheapest market. The Committee endeavoured to work the investigation with certain books which were felt to be bulky and unwieldy, and not very suitable to the purpose. They then were obliged to devise instructions. The tooth-brush habit depended not on the character of the children, but on the character of the authorities who presided over the school. Therefore, he alluded with pleasure to the fact that Marylebone Home for Waifs and Strays was the only school that was returned as being clean in every sense. Mr. Cunningham then illustrated by diagrams the results of the figures obtained as to the defects in the various teeth at certain ages.

Mr. L. MATHESON thought that the investigation had already proved of great value. The authorities were already moving towards the appointment of dental surgeons. The intention of the Committee was not so much to get the results of an enormous number of teeth examined in a casual way, but rather to have a smaller number carefully examined.

Mr. R. WATT said that for many years he had been in the habit of gratuitously doing extractions for an institution in Warwickshire which was supported by voluntary contributions, but now he had been appointed at a small salary to stop the teeth.

A HIGHER DENTAL DIPLOMA.

Mr. J. M. ACKLAND read a paper on this question. He held that at present the L.D.S.Eng., was second to no dental diploma in the world. It could only be obtained after a long and tedious curriculum, followed by a strict and searching examination. The weakest point in the medical profession was the multiplicity of its diplomas, almost any of which enabled a man to be on the Register, there being no compulsory examination for all to pass. He quite agreed that they had not yet arrived at perfection in their system of dental education, but they should set to work to make their L.D.S. as near perfection as they could, and not establish another diploma. For what would inevitably follow? The L.D.S. would still remain a means of entrance to the Dental Register to any who, for various reasons, might not care to take the new diploma, and so the result would be most disastrous both to the general public and to the profession. While he did not believe in a man taking the medical diploma and merely bestowing his spare energy and time on the L.D.S., he looked forward eagerly to the time when the first and second examinations for the conjoint M.R.C.S. and L.R.C.P. would be made compulsory for the L.D.S. A second dental diploma would sever more than ever the dental from the medical, which would be a distinctly retrograde step. Before making any sweeping alterations and establishing new diplomas it ought to be conclusively proved that the existing one was a failure, and did not answer the purpose for which it was intended. Continued fault-finding with the one recognised diploma could not but have a prejudicial effect on the profession as a whole. He gave Mr. Campion credit for having called attention to many little matters, all of which, however, could easily be rectified without another diploma. The past ten years in the history of the dental profession had not its equal in that of any other. Their status and influence had increased by leaps and bounds. They should then be careful not to take any step which might prove dangerous if not absolutely suicidal.

A Proposed Change in the English Dental Examination.

Mr. G. G. Campion read a paper on this subject. He said that the proposal that dental students should be obliged to pass the first two medical examinations, ensuring a knowledge of anatomy and physiology, was adopted by the Irish College some two years ago, and would come in force in the Scotch Colleges next October. What changes in the curriculum would be entailed by making the second conjoint examination compulsory for dental students, and how far might they correctly be termed an improvement? In framing an examination, due consideration should be paid to the relative value of its different constituent parts, and in raising the standard the same consideration should have weight. The proportion which was observable in the present examination would, by the adoption of the proposal, be destroyed, and this surely constituted no slight objection to it. It was tacitly admitted that students who succeeded in passing the two examinations as well as the dental in the two years' dental and general hospital practice, did so only at the cost of their practical work at the Dental Hospital, the demand on their time being so great as not to permit of such frequent or lengthy attendance there as was possible for the man who was working only for the dental diploma. The first and second conjoint examinations had no relation to surgery. They did indeed enforce a comparatively high standard of knowledge in anatomy and physiology, and dealt also with chemistry and materia medica, but of surgery pure and simple they knew nothing; so that not only would their imposition on all dental students not tend to stimulate a more general knowledge of those parts of surgery which had some direct bearing on dental work; but inasmuch as they would force the student to devote far more of his time, than at present, to the acquisition of those subjects with which they dealt, they would, *ipso facto*, diminish his attendance in the wards and also at the surgical out-patient department, where the most practical work in surgery was learnt, and where, even now, as Mr. Smale had told them, the attendance of the purely dental student was very often *nil*. The adoption of the proposed change in their examination would weaken the practical work in every branch of their study, for the purpose of imposing on dental students in four subjects of the least practical utility an arbitrary standard of examination framed for a wholly different purpose, demonstrably unsuited to the conditions under which they worked, and of which it was not too much to say that the additional knowledge enforced by it would be learnt only to be forgotten. It would also go far to crush out the tendency to variation which, in the sphere of specialised and technical education, as in biology, was the very basis of development. Could it be seriously regarded as an improvement in the scheme of teaching that manual training and hospital practice should be diminished for the purpose of partially replacing them by a disproportionate amount of anatomy and physiology? He saw no grounds for the belief that even an unlimited extension of their course of study would, of necessity, tend precisely in the direction of improvement. A philosophy of education, or even of specialised education, had yet to be constructed. He did not know that as yet even the materials for it existed, nor was it likely that any serious contribution towards their chapter in such a work would be made by those thinkers whose only idea for regenerating the profession and perfecting its education was the compulsory addition of the medical to the dental curriculum. There existed a general consensus of opinion that the addition of an examination in mechanical dentistry had materially improved the dental license, and were an examination held at the end of the apprenticeship, and students who failed in the necessary knowledge and attainments referred back to their work for a further period of six months, there could be no doubt that it would exercise a salutary influence on the students, while it might also stimulate practitioners to systematise their teaching and make it more thorough. If it were found possible to supplement the practical examination with a paper on dental metallurgy and mechanics, the students, and indeed the whole profession, might be spared the curious and painful experience of seeing the composition of celluloid, gold solder, and dental alloy classed by the examiners as a branch of dental pathology.

Mr. LATCHMORE disagreed with the conclusions of Mr. CAMPION'S paper, and supported the proposal which that paper had condemned.

Dr. STACK would like to see the examination in mechanical dentistry always held at the final examination, but so long as diplomas were granted by great surgical corporations it was no use trying to aim at a higher examination on the mechanical side. He suggested that they should try to persuade the Corporations to allow the men with L.D.S. to go forward and take the M.R.C.S., without taking the diplomas in medicine and midwifery.

Mr. MATHESON sympathised with Mr. Campion's paper, because the proposed change would, of necessity, if carried out, diminish the time spent by the student in the workshop and in the Dental Hospital.

The hour for closing the meeting having arrived,

Mr. CAMPION said as it was impossible now to continue the discussion, he would take an opportunity of replying in another way.

The meeting then terminated.

DEMONSTRATIONS.

Mr. Lennox, of Cambridge, demonstrated the various modes of employing fusible metal melted at the boiling point of water :—

1. As base-plate for trying in bites.
2. Punches for crowning.
3. For pivoting.

4. For bite slabs.
5. To fill spaces between teeth on gold plates in lieu of vulcanite.
6. To obtain metal instead of plaster models.
7. To repair of vulcanite plates (loss of a single tooth).
8. To make casts, for repairing gold plates, direct from the impression.

For further information on the use of the fusible metal, readers are referred to Mr. Lennox's paper.

Mr. R. H. Woodhouse:—Combination gold filling.

Mr. W. Hern crowned an upper bicuspid root with a porcelain and gold crown.

Mr. J. Ackery filled a tooth with non-cohesive gold. The cavity (a large crown cavity in a lower molar) was not very suitable, having too thin a posterior wall. To overcome this the operator filled the posterior third of the cavity with tin and gold combined, which were capable of being condensed with less pressure. The remaining two-thirds of the cavity was filled with non-cohesive gold cylinders. The entire operation was completed in fifty minutes.

Mr. Claude Rogers made a gold crown for an upper bicuspid. After preparing the root he fitted the collar and contoured it to simulate the outline of a bicuspid. The articulating surface had been previously struck up, but Mr. Rogers added a pin to it for the better support of the completed crown when inserted. The whole process was completed in a remarkably short time.

Mr. Harry Rose set up an easy upper denture, and demonstrated the various stages of his method of making continuous gum dentures.

Mr. G. Brunton filled two lower molar cavities and demonstrated the application of matrices. One, a crown and mesial interstitial cavity, was commenced with amalgam; sponge-gold was then added directly to the amalgam and the filling cohesively with Wolrab's cylinders.

Mr. Baldwin inserted a cohesive gold filling and demonstrated the use of Bonwill's engine mallet.

Mr. J. F. Colyer inserted a cohesive gold filling, demonstrating the use of the electric mallet.

Mr. Henri Weiss gave a demonstration upon the various methods of inserting glass inlays. He drew attention to the fact that these facings depended entirely upon the position which would keep them free from the process of mastication and the durability of the cement into which they were embedded for the length of time they would last. As the glass inlay is intended only as a reproduction in appearance of the tooth tissue, he suggested limiting the process to the region bounded by the first bicuspid teeth. The process was described as follows: A cavity possessing four walls is prepared to the depth of the 1/16th inch, taking care to obtain walls perfectly parallel; into this gold foil of 30 grains weight, or platinum of equal thickness, is pressed by means of a pellet of cotton wool until a cup or matrix is obtained, fitting with great accuracy. This is removed and placed on a screen of platinum gauze over a Bunsen flame, and a small amount of powdered glass (Rechter's preparations) is fused, more is then added which has been mixed with water by means of a fine camel hair pencil and again fused. This is repeated until the matrix is filled to the required height and then allowed to cool. The cavity is then deepened and under cuts provided, taking great care not to encroach upon the margin line, and after the gold foil is stripped from the inlay, it is carried by means of a point, upon which some adhesive wax is attached, and placed in the cavity. Being assured that the inlay is fitting in every respect, some Weston's insoluble slow setting cement is placed in the cavity and the inlay embedded and time allowed to secure perfect setting. Mr. Weiss showed us some contour gold fillings which had been fitted with glass inlays, with a result that was highly artistic, and we may add with every promise of long durability.

Dr. Cunningham:—Low-fusing Continous Gum and Tinting Artificial Teeth. The process was explained by specimens in various stages, while one small case was successfully enamelled and baked in a muffle furnace (Fletcher, No. 261), over a large Bunsen flame with draught chimney but no blower, in eleven minutes from start to finish. A twin-table, the invention of Mr. Oscar Müller, who assisted the demonstrator, was shown to facilitate the reversal of a piece in firing. A new slide for the muffle was also shown. A miniature copy of the same furnace, made of fire-clay and sawdust and heated by a small twin Bunsen flame, was used for tinting artificial teeth, and is applicable for firing glass fillings and small bridge cases or crowns to which it is desired to add gum enamel. A series of gum "shades" were shown, and the method of producing varieties of these by mechanical mixing and "mulling" explained and demonstrated. Specimens of tinted teeth and finished cases representing natural and artificial discolorations of the teeth were shown, also a case after eighteen months' constant wear in the mouth. The feature of the tinting and shading of the teeth was that such effects as smoking, cracks in the enamel, and the like, could be successfully imitated by a fused glaze which would not wear off, and that any tooth of a suitable shape could be altered in colour to suit a special case.

Mr. Harding inserted a non-cohesive filling.

Mr. Walter Coffin demonstrated the application of English pink gutta-percha in modelling. The impression trays used were made of perforated sheet tin, and flattened pieces of gutta-percha were softened in nearly boiling water. Before inserting the soft material in the mouth the whole was dipped in cold water to chill the surface, then inserted and kept in the mouth for two minutes. When removed, being still very soft, the impression was placed in cold water, the tray resting on a glass rod to prevent any displacement of the material while still soft. It becomes quite hard in about a quarter of an hour. Mr. Coffin advocated its employment in regulation and partial denture cases, where some cervical undercut may be taken advantage of in thin elastic rubber plates, vulcanised directly on the original model.

Mr. Kirby showed many instructive and interesting things (a longer notice will, it is hoped, be possible in another issue); not the least instructive to the practitioner were the results of his experiments on the use of amalgams. He showed a small trough and several ingots of amalgam which had been made in it. A certain number did not fit the trough at all, they had curled up at the ends and rocked very much. Some others, again, fitted the trough closely and no movement could be detected. Mr. Kirby found that in the former cases this result did not ensue immediately, but generally made its appearance about the end of the second week. The cause, which was proved to be the correct one by several tests, was explained to be as follows: The amalgam was all of uniform moisture when inserted, and, as subsequent layers were added, some of the mercury was pressed from the lower part of the filling nearer the surface, so that the filling, when completed, would contain more mercury near its surface than in its lower parts; during the following fortnight a more equal distribution of the mercury takes place, the lower part expanding while the upper shows a tendency to contract. The other ingots referred to were prepared differently; amalgam of ordinary moisture was first placed in the trough, filling two-thirds of it, a much drier amalgam was then added (about 5 grains of alloy to 1 grain of mercury) and the filling thus completed. The tendency of the amalgam fillings to change their form was in this manner obviated.

Mr. Gartrell showed a vulcanizer and gave demonstrations of a removable bridge. A more detailed notice of Mr. Gartrell's demonstration will appear in our next issue.

Royal College of Surgeons, Edinburgh.

During the July sittings of the Examiners, the following gentlemen passed the First Professional Examination for the Licence in Dental Surgery :—William Williams, Beaumaris, and Alexander Henderson Bain, Galashiels ; and the following gentlemen passed the Final Professional Examination, and were admitted L.D.S., Edinburgh ; Andrew Kinsman Brittan, Plymton ; Samuel Arthur Westerton, London ; Thomas Watson Morton, Cumberland ; George Samuel Bonnalie, Chester ; David Wilson, Edinburgh ; and Robert Keith Common, Edinburgh.

The Edinburgh Dental Students' Society

Met on four occasions during the past summer session. At these meetings, which constitute a new departure on the part of the Society (whose proceedings hitherto have been confined to the carrying out of a comprehensive winter syllabus) highly practical and valuable clinical lectures and demonstrations were given on the following subjects :—

Taking "Bites"	by Mr. Andrew Wilson, L.D.S. and Mr. David Monroe, L.D.S.
Local Anathetics	by Mr. George W. Watson, L.D.S. and Mr. Herbert B. Ezard, L.D.S.
"Roots"	by Mr. J. Graham Munro, L.D.S. and Mr. John Turner, L.D.S.
Plastic Fillings and their combinations	by Mr. J. S. Amoore, L.D.S and Mr. L. Masters, L.D.S.

Great interest was evinced in the proceedings, and the Society has every reason to be satisfied with the success of the experiment.

THE DENTAL RECORD, LONDON: SEPT. 1, 1891.

DENTISTS AT PLAY.

AMONG the many successful Annual General Meetings which the British Dental Association has held, that of 1891 will be remembered as one of the best. Our columns, delayed in their publication on purpose to give a fairly descriptive account of the work meetings, give evidence of the value of the papers and demonstrations, so that it only remains for us for add that the less severe part of the programme was as successful and quite as much appreciated. The reception at the Whitehall Rooms of the Mètropole was held as an inauguration function, and gave an opportunity, embraced by a very large number of members, of introducing the ladies of their party to the "stern realities of London life," stern realities which, we are bound to confess, were exceptionally pleasant. The President's genial reception of all comers took away all formality from the proceeding and effectually made the reception an "at home." The Soirée at South Kensington, given by the Odontological Society of Great Britain, owed much to the untiring efforts of its officers, and in spite of the terrors of Deucalion without, the company within the beautiful galleries and courts of the Museum passed a most enjoyable evening. The programme was varied and in every sense "good;" there was no scramble for "the last ice" before the evening was half through, as thoughtful heads and liberal hands had provided alike for physical and psychic wants, and had done so admirably. Whoever was responsible for that evening's entertainment should feel most satisfied. The Annual Dinners of the Association are always a success, and with Mr. Smith-Turner as chairman, and Mr. Ernest Hart as spokesman of the evening, success on this occasion was a foregone conclusion. If our loyalty and our affection for the militant section of society could be satisfied with less prolixity than sometimes is indulged in, more leisure for the serious toasts of the evening would be given, and it was, therefore, with pleasure that we observed the Chairman set an excellent example in giving the Royal toasts—pithily, earnestly, and tersely. A distinct and commendable feature of the meeting was constituted by careful arrangements made for the convenience and entertainment of the ladies who accompanied members to the meeting, and the *Soirée Musicale*, held at the Mêtropole on the night of the dinner, was by all pronounced a success. The visitors were also entertained by private members, and received a cordial welcome from all who were able to supplement the hospitality of the Association and the Odontological Society.

WE regret that we have been compelled through exigencies of time and space to defer until our next issue some valuable material concerning the Annual General Meeting, notably the Museum and "Exibits," and some of the "Demonstrations."

STUDENTS' SUPPLEMENT.

REGISTRATION OF DENTAL STUDENTS.

The registration of dental students shall be carried on at the Medical Council Office, 299, Oxford Street, W.

Every dental student shall be registered in the manner hereinafter prescribed by the General Medical Council.

No dental student shall be registered until he has passed a preliminary examination, as required by the General Medical Council,* and has produced evidence that he has commenced medical study.

The commencement of the course of professional study recognised by any of the qualifying bodies shall not be reckoned as dating earlier than fifteen days before the date of registration.

Students who commenced their professional education by apprenticeship to dentists entitled to be registered, or by attendance upon professional lectures, before July 22nd, 1878 (when dental education became compulsory), shall not be required to produce evidence of having passed a preliminary education.

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* Exception may be made in the case of a student from any Indian, Colonial, or foreign university or college, who shall have passed the matriculation or other equivalent examination of his university or college, provided such examination fairly represents a standard of general education equivalent to that required in this country.

Candidates for a diploma in dental surgery shall produce certificates of having been engaged during four years in professional studies, and of having received three years' instruction in mechanical dentistry from a registered practitioner.

One year's *bonâ fide* apprenticeship with a registered dental practitioner, after being registered as a dental student, may be counted as one of the four years of professional study.

The three years of instruction in mechanical dentistry, or any part of them, may be taken by the dental student either before or after his registration as a student; but no year of such mechanical instruction shall be counted as one of the four years of professional study unless taken after registration.

Forms of registration may be obtained at the office of the General Medical Council. No fee is required for registration as a student.

PRELIMINARY EDUCATION.*

Regulations of General Medical Council.

No person shall be allowed to be registered as a medical or a dental student unless he shall have previously passed (at one or more examinations) a preliminary examination in the subjects of General Education as specified in the following List :—

1. English Language, including Grammar and Composition ;
2. Latin, including Grammar, Translation from specified authors, and Translation of easy passages not taken from such authors ;
3. Mathematics, comprising (α) Arithmetic, (β) Algebra, including Simple Equations, (γ) Geometry, including the subject matter of the first three books of Euclid, with easy Deductions ;
4. One of the following optional subjects :—
   (α) Greek ; (β) French ; (γ) German ; (δ) Italian ; (ε) any other Modern Language ; (ζ) Logic.

The Council will not, in future, accept any certificate of pass in preliminary examination in general education unless the whole of the subjects included in the preliminary examination required by the Council for Registration of Medical Students have been passed at the same time, but this rule does not apply to those who, previous to

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* These regulations come into force January 1st, 1892, until then "Mechanics" is a compulsory subject (see *Dental Record*, September, 1890).

January, 1892, have passed a part of any preliminary examination recognised by the Council.

List of Examining Bodies whose Examinations fulfil the conditions of the Medical Council as regards preliminary education, and entitle to registration as medical or dental student.

I.—UNIVERSITIES IN THE UNITED KINGDOM.

Oxford or Cambridge :—

(*a.*) Junior Local Examinations; Certificate to include Latin and Mathematics, and also one of the following optional subjects, Greek, French, German.

(*b.*) Senior Local Examinations; Certificate to include Latin and Mathematics.

(*c.*) Responsions, (Oxon.) Higher Local Examinations, (Cantab.)

(*d.*) Moderations, (Oxon.) Previous Examinations, (Cantab.)

(*e.*) Examination for a Degree in Arts.

London :—

(*a.*) Matriculation Examination.

(*b.*) Preliminary Scientific (M.B.) Examination.

(*c.*) Examination for a Degree in Arts or Science.

Durham :—

(*a.*) Examination for Certificate of Proficiency.

(*b.*) Examination for Students at the end of their first year.

(*c.*) Examination for a Degree in Arts.

Victoria University :—

(*a.*) Preliminary Examination; Latin to be one of the subjects.

(*b.*) Entrance Examination in Arts, to include all the subjects required.

Universities of Edinburgh, Aberdeen, Glasgow, St. Andrews :—

(*a.*) Local Examination (Junior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects, Greek, French, German, (or all subjects required.)

(*b.*) Local Examinations (Senior Certificate); Certificate to include English Literature, Arithmetic, Algebra, Geometry, Latin, and also one of the following optional subjects, Greek, French, German.

(*c.*) Preliminary Examination for Graduation in Science (Edinburgh) or Medicine and Surgery.

(*d.*) Examination for a Degree in Arts.

University of Dublin :—

(*a.*) Public Entrance Examination.

(*b.*) General Examination at end of Senior Freshman year.

(*c.*) Examination for a Degree in Arts.

Queen's University in Ireland:—

(*a.*) Local Examinations for men and women; Certificate to include all the subjects required by the General Medical Council.

(*b.*) Entrance or Matriculation Examination.

(*c.*) Previous Examination for B.A. Degree.

(*d.*) Examination for a Degree in Arts.

Royal University of Ireland:—Matriculation Examination.

Oxford and Cambridge Schools' Examination Boards:—

Certificate to include the following subjects:—An adequate knowledge of English Grammar and Orthography, as shown in the course of the Examination, to the satisfaction of the Examiners, being held as conforming to the requirements of the Medical Council in regard to those subjects:—

(*a.*) Arithmetic, including Vulgar and Decimal Fractions.

(*b.*) Algebra, including Simple Equations.

(*c.*) Geometry, including the first two books of Euclid.

(*d.*) Latin, including Translation and Grammar.

(*e.*) Also one of these optional subjects:—Greek, French, German.

II.—OTHER BODIES NAMED IN SCHEDULE (A) TO THE MEDICAL ACT.

Apothecaries' Society of London:—Examination in Arts.

Royal Colleges of Physicians and Surgeons of Edinburgh:—

Preliminary (combined) Examination in General Education.

Faculty of Physicians and Surgeons of Glasgow:—

Preliminary Examination in General Education.

Royal College of Surgeons in Ireland:—

Preliminary Examination; Certificate to include Mathematics.

III.—EXAMINING BODIES IN THE UNITED KINGDOM, NOT INCLUDED IN SCHEDULE (A) TO THE MEDICAL ACT (1858).

College of Preceptors:—Examination for a First Class Certificate, or Second Class Certificate of First or Second Division, Algebra, Geometry, Latin, and a Modern Language, having been taken.

Queen's College, Belfast; Queen's College, Cork; Queen's College, Galway:—Matriculation.

Intermediate Education Board of Ireland:—

Junior Grade Examination Middle Grade Examination Senior Grade Examination	Certificate in each case to include all the subjects required.

St. David's College, Lampeter:—

Responsions Examinations, to include all subjects required.

Educational Institute of Scotland:—

Preliminary Medical Examination.

IV.—CERTAIN INDIAN, COLONIAL AND FOREIGN UNIVERSITIES AND COLLEGES.

REGULATIONS OF THE VARIOUS EXAMINING BODIES FOR THE DIPLOMA IN DENTAL SURGERY (L.D.S.)

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
1—PRELIMINARY EXAMINATION	Compulsory on all who commenced their Professional Education after July 22nd, 1878. Must be registered as a Dental Student at the office of the General Medical Council, 299, Oxford St., London, W.	Compulsory on all who commence their Professional Education after August 1st, 1878. This differs slightly from that required by the English College. Must be duly registered.	Compulsory on all, except those who have passed one equivalent examination. Must be duly registered.	Compulsory on all who commenced the Professional Education after August 1st, 1878. Must be duly registered.
2—AGE at which the Candidate may present himself	Twenty-one.	Twenty-one.	Any age, but diploma cannot be granted until he is twenty-one.	Twenty-one.
3—DURATION OF PROFESSIONAL EDUCATION	Four years subsequent to registration.	Four years.	45 months.	Four years.
4—COURSES OF LECTURES, &c., to be attended at a recognised School :--		*** For Students commencing after October, 1890.		
Anatomy	A Course of Lectures during not less than six months or one Winter Session...	One Winter Course. (Six months.)	One Course.	One Winter Session and twenty Lectures on Head and Neck.

4—Courses of Lectures, &c. (*continued*)—	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
Physiology	One course. (Six months.)	Six months.	One Course.	One Six months' Course.
Practical Physiology (separate from above)	Three months' Course.		One Course.	
Surgery	Six months' Course.	One Winter Course.	Ditto.	Ditto.
Medicine	Ditto.	Ditto.	Ditto.	Ditto.
Chemistry	Instruction in, which must include Practical Chemistry and Physics.	Ditto (held to embody Metallurgy). Three months.		
Practical Chemistry		Three months.		Three months (includes Metallurgy).
Materia Medica	Instruction in Chemistry, Practical Chemistry and Materia Medica need not be taken in the general hospital and may be taken before registration. ⁂ Attendance at Class Examinations obligatory	One three months' Course.	Ditto.	Ditto.
Dissections and Demonstrations, or	Twelve months.	Twelve months.	Two Courses.	Nine months.
Dissections and Practical Anatomy		Twelve months. One Course.		
Metallurgy	One Course.		One Course.	
Course of Lectures on Surgery	Six months, or one Winter Session.			
One Course of Lectures on Medicine	Six months, or one Winter Session.			
Practice of Surgery, and Clinical Lectures	Two Winter Sessions.	One six months' Course, or two three months' Courses	Two Winter Sessions.	Twenty-four Lectures.
Dental Anatomy and Physiology	Two Courses.	One Course.	None.	Twenty-four Lectures.

4—COURSES OF LECTURES, &c. (*continued*)—	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
Dental Surgery & Pathology	Two Courses.	One Course.	Two Courses.	Twenty Lectures.
Metallurgy (unless specially included in Practical Chemistry	Ditto.			Twelve Lectures.
Dental Mechanics	Ditto. *** Attendance at Class Examinations obligatory	One Course.	Two Courses.	Twelve Lectures or Demonstrations.
Practical Instruction in Mechanical Dentistry ...	Three years under a competent Practitioner. This instruction may be taken previous to Registration (1).	Three years under a Registered Dental Practitioner, or in Mechanical Department of a recognised Dental Hospital whose arrangements are held to be satisfactory to the College (2).	Three years under a Registered Dental Licentiate.	Three years under a Registered Practitioner. Attendance at Hospital.‡
Practice of Dental Surgery in a recognised Dental Hospital, or in the Dental Department of a recognised General Hospital...	Two years.	Two years.	Two years.‡‡	Two years.‡‡
5—FEE	£10 10s. over and above stamp duty.	£10 10s.	£10 10s.	£10 10s.
6—LEAST period during which unsuccessful Candidates are referred to their studies	Six months, subject to the decision of the Board.	Three months. *** No Candidate admitted to this Examination who has been rejected by any other Licensing Board within three months.	Six months.	Three months.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
7—PARTICULARS OF EXAMINATION	(A) *Written.* On General Anatomy and Physiology. General Pathology and Surgery;† Dental Anatomy and Physiology; Dental Pathology and Surgery. At the Practical Examination Candidates may be examined—	*Written and Oral :* (1). 1st Part—Anatomy, Physiology, Chemistry with Metallurgy.	First two Examinations same as for Conjoint Board. The third comprises— *Written and Oral :* On all the subjects of the Curriculum, Preparations, Microscopes, and other appliances.†	*Written, Oral & Practical :* 1st Part—Anatomy, Physiology, Chemistry, and Metallurgy.
	(*a*) On the treatment of Dental Caries, and may be required to prepare and fill cavities with gold or plastic filling or other material, or to do any other operation in Dental Surgery. (Candidates must provide their own instruments.) (*b*) On the mechanical and Surgical treatment of the various irregularities of Children's teeth. (*c*) On Mechanical Dentistry. (B) *Oral :* On all subjects in the Curriculum. Preparations, Casts and Drawings.	2nd Part—Surgery, Medicine, Therapeutics, and Special subjects of Dental Anatomy and Physiology, Dental Surgery, Pathology, and Dental Mechanics. Registered Medical Practitioners are examined on special subjects only. There is a Practical Clinical as well as Written and Oral Examination in Dental and Oral Surgery, Pathology and Mechanics.	General Surgery, as for third Examination of Conjoint Board.	2nd Part—Surgery, Medicine, Materia Medica, and special Dental subjects. Practical Examination at a Dental Hospital. Candidates are to bring Excavators, Files, and Plugging Instruments.

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
8—DATE OF EXAMINATION	May and November.	I. Professional Examinations. Tuesday, May 3, 1892. ,, July 26, 1892.	Quarterly.	Thursday, October, 8, 1891. ,, May 5, 1892. The Second Examination takes place two days subsequent to these dates.
*9—MODIFIED CONDITIONS OF ADMISSION TO EXAMINATION *sine curriculo*: (*a*) Conditions of eligibility.		II. Professional Examinations. Following Thursday. N B.—Students who commenced their professional education by apprenticeship, before July 22, 1878, are exempted from the Preliminary Examination	Candidates must be registered Dental Practitioners in practice before 1878.	
(*b*) Certificates, &c., required (*continued*)			Certificates of moral and professional character, signed by two Registered Medical Practitioners, and by two Registered Dentists. Name. Age. Address. Date of commencing practice, and whether such practice has been carried on in conjunction with any other business, and if so with what business.	

	Royal College of Surgeons, England.	Royal College of Surgeons, Edinburgh.	Royal College of Surgeons, Ireland.	Faculty of Physicians and Surgeons, Glasgow.
9—MODIFIED CONDITIONS OF ADMISSION TO EXAMIATIONS (*cont.*)			Professional status. Particulars of Professional Education.	Various undertakings as to Professional conduct, &c., have to be made by the Candidate.
(*c*) Manner of Examination				
Fee..............................			£21.	
For further information apply to Secretary.	F. G. HALLETT, Esq., Examination Hall, Victoria Embankment, London, W.C.	JAMES ROBERTSON, Solicitor, Interim Secretary, and Treasurer, 1, Gough Square, Edinburgh.	JOHN BRENNEN, Esq., Royal College of Surgeons, Dublin.	ALEX. DUNCAN, Esq., Faculty of Physicians and Surgeons, Glasgow.

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1. In the case of qualified Surgeons, evidence of a period of not less than two, instead of three, years of such instruction will be sufficient.

2. One year's *bonâ fide* apprenticeship with a registered dental practitioner, after being registered as a dental student, may be counted as one of the four years of professional studies.

The three years of instruction in mechanical dentistry, or any part of them, may be taken by the student either before or after his registration as a student; but no year of such mechanical instruction shall be counted as one of the four years of professional study unless taken after registration.

* Candidates who have passed the Second Examination of the Examining Board in England, or who shall produce evidence of having passed the Examination in Anatomy and Physiology required for the Licence in Surgery of the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, or an Examination in Anatomy and Physiology required for a Degree in Medicine or Surgery at a University in the United Kingdom, will be exempt from re-examination in those subjects.

† Candidates who are Members of the College, or who have passed the Examination in Surgery of the Examining Board in England, or who shall produce evidence of having passed the Examination in Surgery for the Licence in Surgery of the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, or an Examination in Surgery for a Degree in Medicine or Surgery at a University in the United Kingdom, will be exempt from re-examination in General Surgery and Pathology.

‡ Attendance for two years at a recognised Dental Hospital, or the Dental Department of a recognised General Hospital, in which special provision is made for the proper training of Dental Students.

‖ Practice of recognised General (Surgical) Hospital required for six months.

SPECIAL (DENTAL) HOSPITALS.

LONDON SCHOOL OF DENTAL SURGERY, LEICESTER SQUARE.

Consulting Physician.—Sir James Risdon Bennett, F.R.S., M.D.

Consulting Surgeon.—Mr. Christopher Heath, F.R.C.S.

Consulting Dental Surgeon.—Sir John Tomes, F.R.S., F.R.C.S., L.D.S.

Dental Surgeons.—Messrs. Storer Bennett; F. Canton: G. Gregson; Claude Rogers; C. E. Truman; R. H. Woodhouse.

Assistant Dental Surgeons.—Messrs. W. Hern; Leonard Matheson: G. W. Parkinson; W. B. Paterson; L. Read; E. Lloyd Williams. In the afternoons, Messrs. F. J. Bennett; J. F. Colyer; C. F. Rilot; A. C. Woodhouse and Mr. W. H. Woodruff.

Anæsthetists.—Messrs. G. H. Bailey; T. Bird; Woodhouse Braine; Joseph Mills.

Assistant Anæsthetists.—Drs. Dudley W. Buxton; Frederic W. Hewitt.

Demonstrators.—Messrs. E. H. L. Briault; A. Colyer; W. H. Dolamore, and J. P Smith.

Medical Tutor.—Mr. H. Baldwin;

Curator of Mechanical Laboratory.—Mr. A. J. Watts.

LECTURERS:—*Dental Surgery and Pathology.*—Mr. Storer Bennett.

Dental Anatomy and Pathology (Human and Comparative).—Mr. Arthur Underwood.

Dental Mechanics.—Mr. David Hepburn.

Metallurgy in its application to Dental purposes.—Professor A. K. Huntingdon (King's College, London).

MECHANICAL LABORATORY.

A mechanical laboratory is now fitted up and opened under the care and superintendence of the lecturer on dental mechanics, and a highly skilled mechanic. Students will be required to take models, manufacture, and fit into the mouth dentures for those patients allotted to them by members of the staff. The actual manufacture to be under the superintendence of the mechanical assistant, while the adapting to the mouth will be supervised by Members of the Staff.

It is intended, in this manner, to supply a portion of the Students' Education heretofore unprovided for, and to more perfectly equip him for the exigences of dental practice. It will enable him to be in a better position to meet the requirements of the College of Surgeons of England with regard to mechanical dentistry, in which subjects the Board of Examiners for the L.D.S. may demand a practical examination from candidates for that diploma.

GENERAL FEE FOR THE SPECIAL LECTURES REQUIRED BY THE CURRICULUM.

Viz., two Courses on Dental Anatomy, two Courses on Dental Surgery, two Courses on Mechanical Dentistry, and one Course of Metallurgy, £15 15s.

Fee for the Two Years' Practice of the Hospital required by the Curriculum, £15 15s.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum £31 10s.

Students who perform Operations for Filling Teeth must provide their own Instruments for the same.

Additional Fees for a General Hospital for the two years, to fulfil the requirements of the Curriculum, vary from £40 to £50.

MEDICAL TUTOR.

The Medical tutor attends on four days in the week, from 5 to 7 p.m., for two months previous to two of the Annual Examinations.

MORTON SMALE, *Dean.*

NATIONAL DENTAL HOSPITAL AND COLLEGE.

GREAT PORTLAND STREET, W.

Consulting Physicians.—B. W. Richardson, M.A., M.D., F.R.S. ; W. H. Broadbent, M.D., F.R.C.P.

Consulting Surgeons.—Sir Spencer Wells Bart., F.R.C.S. ; Christopher Heath, F.R.C.S.

Consulting Dental Surgeon.—Sir Edwin Saunders, F.R.C.S.

Dental Surgeons.—A. F. Canton ; H. G. Read ; Harry Rose ; Alfred Smith ; F. Henri Weiss ; G. A. Williams.

Assistant Dental Surgeons.—Marcus Davis ; C. W. Glassington ; W. R. Humby ; R. Denison Pedley ; G. Read ; Willoughby Weiss.

Anæsthetists.—Chas. H. Barkley ; Henry Davis ; James Maughan ; S. E. Pedley ; Sidney Spokes.

LECTURERS :—*Dental Anatomy and Physiology.*—Sidney Spokes.

Dental Surgery and Pathology.—Willoughby Weiss.

Dental Mechanics.—Harry Rose.

Dental Metallurgy.—W. Lapraik.

Operative Dental Surgery.—George Cunningham.

Dental Materia Medica.—C. W. Glassington.

Elements of Histology.—James Maughan.

Demonstrator of Dental Mechanics.—W. R. Humby.

Hospital Practice to Registered Practitioners (six months), £7 7s. Ditto (twelve months), £9 9s.

Fee for the two years' Hospital Practice required by the Curriculum, £12 12s. Perpetual Fee, £15 15s.

A laboratory has been arranged for pivot, crown, bar and regulation cases.

Total Fee for the Special Lectures and Hospital Practice required by the Curriculum, £25 4s. Perpetual Fee, £31 10s.

F. HENRI WEISS, *Dean.*

GUY'S HOSPITAL (DENTAL SCHOOL).

Dental Surgeon.—F. Newland-Pedley.

Assistant Dental Surgeons.—Messrs. W. A. Maggs; J. Mansbridge; H. Murray; H. L. Pillin; G. O. Richards; R. W. Rouw.

Anæsthetists.—Drs. F. W. Cock; J. F. Silk.

LECTURERS:—*Dental Surgery.*—Mr. Newland-Pedley.

Dental Anatomy and Physiology.—Mr. Maggs.

Dental Mechanics.—Mr. Richards.

Metallurgy.—C. E. Groves, F.R.S.

Anæsthetics.—T. Bird.

Dental Microscopy—Mr. Mansbridge.

Tutor.—Mr. Rouw. *Dean.*—Dr. Perry.

FEES:—1. By the payment of £70 on entrance.

2. By two payments of 40 guineas, and 30 guineas at the beginning of the first and second years respectively.

A ticket which gives admission to the special lectures and demonstrations and dental practice only may be obtained for 30 guineas paid on entrance.

The inclusive fee for students entering for the M.R.C.S., L.R.C.P., and L.D.S., Eng., is £150 paid in one sum, or 150 guineas paid in three annnal instalments at the commencement of each academical year:—First year, £60; second year, £60; third year, £37 10s

EDINBURGH.

DENTAL HOSPITAL AND SCHOOL.

Consulting Physician.—Alex. Peddie, M.D.

Consulting Surgeon.—Joseph Bell, M.D., F.R.C.S.E.

Fee for the two years' practice required by the Curriculum, £12 12s. Fee for each course of lectures, £3 3s.

Consulting Dental Surgeon.—John Smith, D.M., F.R.C.S.E.

Dean and Hon. Treasurer.—W. Bowman Macleod, L.D.S.

Dental Surgeons.—Messrs. Andrew Wilson; Malcolm Macgregor; George W. Watson; J. Stewart Durward; James Mackintosh; James Lindsay.

Assistant Dental Surgeons.—William Forrester; John S. Amoore; J. Graham Munro; Wm. Wilson; John Turner; David Munroe.

Chloroformists.—R. Stewart; W. Keiller.

DENTAL SCHOOL (LECTURES).

Dental Anatomy and Physiology (Human and Comparative).—Mr. Andrew Wilson.

Dental Surgery and Pathology.—Mr. George W. Watson.

Mechanical Dentistry.—Mr. W. Bowman Macleod.

Practical Mechanics.—Assistant Demonstrator, J. Stewart Durward. The demonstrations will be spread over the two years of hospital practice. Students will require to furnish their own hand tools.

General fee for the Hospital Practice and special Lectures required by the Curriculum.—Hospital Practice, £15 5s. One course each of Dental Anatomy, Dental Surgery, and Mechanical Dentistry and Demonstrations, £9 15s.—£25 10s.

Fees to separate Classes.—Dental Anatomy, Dental Surgery, Mechanical Dentistry, £3 5s. each.

The hospital practice and lectures qualify for the Dental Diploma of the Royal College of Surgeons, Edinburgh, and also for that of the other licensing bodies. Second courses of the lectures, as required by the Royal College of Surgeons of England, £2 4s.

The session 1889-90 opens October, 17th, 1889. General fee for the hospital practice and special lectures required, £25 10s.

For further particulars, apply to the Dean, 5, Lawnston Lane, Edinburgh.

GLASGOW.

DENTAL HOSPITAL AND SCHOOL, 4, CHATHAM PLACE, STERLING ROAD.

Hon. Consulting Physician.—W. T. Gairdner, M.D.

Hon. Consulting Surgeon.—Sir G. H. B. Macleod.

Chloroformists.—Drs. Brown, Campbell and Anderson.

Dental Surgeons.—J. A. Biggs; W. S. Woodburn; Rees Price; James Cumming; J. R. Brownlie; J. C. Woodburn, M.D.

Assistant Dental Surgeons.—W. F. Martin; Alexander White; James Cameron; W. Holt Woodburn.

DENTAL SCHOOL.

Dental Anatomy and Physiology (*Human and Comparative*), by J. Cowan Woodburn.

Dental Surgery and Pathology, by James Rankin Brownlie.

Secretary, D. M. Alexander, Solicitor, 117, Wellington Street, Glasgow, who will forward detailed Prospectus of the School.

BIRMINGHAM SCHOOL OF DENTISTRY, QUEEN'S COLLEGE.

The teaching of Dentistry is now undertaken by the Queen's College acting in Association with the Birmingham Dental Hospital, and the Birmingham Clinical Board, so that students may fully qualify themselves for the Dental Diplomas of the Royal Colleges.

LECTURES FOR THE DENTAL CURRICULUM.

Dental Anatomy and Physiology.—J. Humphreys.

Dental Surgery and Pathology.—C. Sims.

Dental Metallurgy.—W. A. Tilden, D.Sc., F.R.S.

Dental Mechanics.—W. Elliott.

Dental Tutor.—W. T. Madin.

General Subjects.—As taught in Medical Department of Queen's College.

FEES.

A Composition Fee of 60 guineas, payable in one sum or in two sums, viz., 40 guineas at the beginning of the first year and 20 guineas at the beginning of the second year of studentship, admits to the full curriculum required for the Dental Diploma (inclusive of the necessary Hospital Practice).

N.B.—Further particulars may be obtained on application to the Warden at the College, or to the Hon. Secretary of the Dental Board, Queen's College (Mr. J. Humphreys).

BIRMINGHAM DENTAL HOSPITAL.

Hon. Consulting Physician.—Robert M. Simon, M.D.

Hon. Consulting Surgeon.—John St. S. Wilders, M.R.C.S.

Hon. Consulting Dentists.—Thomas R. English; Adams Parker, L.D.S.; Charles Sims, L.D.S.

Hon. Dental Surgeons.—H. Breward Neale; F. E. Huxley; J. Humphreys; F. W. Richards.

Hon. Assistant Dental Surgeons.—F. H. Goffe; Wm. Palethorpe; W. R. Roberts; W. T. Madin; F. R. Howard; A. E. Donagan; J. Mountford.

DENTAL HOSPITAL OF IRELAND.

25, Lincoln Place, Dublin.

Consulting Physicians—F. R. Cruise, M.D. ; John W. Moore, M.D.

Consulting Surgeons.—E. H. Bennett, F.R.C.S.I. ; Sir W. Stokes, F.R.C.S.I.

Consulting Dental Surgeons.—R. H. Moore, F.R.C.S.I; Daniel Corbett, M.R.C.S.E., L.D.S., Eng.

Dental Surgeons.—Messrs. Robert Hazelton ; W. Booth Pearsall; R. Theodore Stack ; A. W. W. Baker ; Daniel Corbett ; George Wycliffe Yeates ; G. M. P. Murray.

Anæsthetists.—Dr. Christopher Gunn ; Messrs. John G. Cronyn ; John R. Graves.

Pathologist.—William Mallett Purser.

Registrar.—William A. Shea.

In connection with a Dental Hospital of Ireland, the Dental School will be open for the Winter Session on October 7th, 1889.

In addition to Clinical Instruction, courses of lectures will be given at the Hospital in Dental Surgery and Pathology, and in Mechanical Dentistry, by R. Theodore Stack ; A. W. W. Baker ; W. Booth Pearsall, and Daniel Corbett, and at the School of Physic, which is in within a few yards of the Hospital, special lectures for dental students will be given in Dental Anatomy, and in Metallurgy by Professor Cunningham and Professor Reynolds. The lectures on dental surgery and medical dentistry will be given during the winter, those in dental anatomy and metallurgy during the summer months. Among the advantages of the school is the mechanical laboratory, where every effort is made to assist the student in mechanical dentistry. In addition to practical instruction in the details of gold, dental alloy, vulcanite, celluloid, and continuous gum work, special demonstrations will be given in the mechanical treatment of cleft-palate, in the treatment of dental irregularities, and in the various methods of inserting pivot teeth. Regulations as to fees and other conditions are the same that exist at the Dental Hospital of London, Leicester Square. Any further information can be obtained from the registrar of the hospital, or

R. Theodore Stack, *Dean.*

THE OWEN'S COLLEGE, MANCHESTER.

DENTAL DEPARTMENT.

Professors and Lecturers.—Anatomy, Professor A. H. Young. Physiology, Professor Wm. Stirling. Medicine, Professor J. E. Morgan; Professor James Ross. Surgery, Professor A. W. Hare. Clinical Surgery, Messrs. F. A. Heath; Walter Whitehead; Thomas Jones; James Hardie; F. A. Southam; G. A. Wright. Chemistry, Professor H. B. Dixon. Materia Medica, Professor D. J. Leech. Dental Surgery, George G. Campion. Dental Anatomy, W. A. Hooton. Dental Mechanics, Thos. Tanner. Dental Metallurgy, Dr. C. A. Burghardt.

The fee for the two years' lectures, &c., required by the dental curriculum of the Colleges of Surgeons is £50, payable in two sums of £25 each at the begining of the first and second years of studentship.

The two years' general hospital practice is taken at the Royal Infirmary. The fee is £10 10s., and includes that for attendance on the lectures on clinical surgery.

For further particulars with regard to the dental department, application should be made to the Registrar, The Owen's College, Manchester.

THE VICTORIA DENTAL HOSPITAL OF MANCHESTER,

GROSVENOR STREET, ALL SAINTS.

Consulting Physicians.—Sir Wm. Roberts, M.D.; Messrs. Henry Simpson, D.D.; J. E. Morgan, M.D.; D. J. Leech; M.D.; D. Lloyd Roberts, M.D.

Consulting Surgeons.—Messrs. E. Lund; F. A. Heath; W. Whitehead; T. Jones; J. Hardie.

Consulting Dental Surgeons.—Messrs. H. Campion; Parsons Shaw.

Dental Surgeons.—Messrs. H. Planck; J. Renshaw; T. Tanner; J. H. Molloy; G. O. Whittaker; W. Dykes; W. Dougan; G. G. Campion; W. Sims; L. Dreschfeld; W. Headridge; J. W. Dunkerley; W. Smithard; E. P. Collett; H. C. Smale.

The fee for the two years' hospital practice required by the College of Surgeons is £12 12s.

For further information apply to HENRY PLANCK, *Dean.*

LIVERPOOL DENTAL HOSPITAL, Mount Pleasant.

Consulting Physician.—Thomas Robinson Glynn, M.D.

Consulting Surgeon.—Frank T. Paul, F.R.C.S., Eng.

Consulting Dental Surgeons.—Messrs. C. Alder; H. C. Quinby; J. E. Rose; W. H. Waite.

Honorary Dental Surgeons. ssrs. R. M. Capon; E. A. Councell; R. Edwards; H. Newton Hindley; W. Mapplebeck; W. Matthews; Thos. Mansell; J. N. P. Newton; J. Pidgeon; M. Quinby; J. Royston; G. A. Williams.

Honorary Assistant Dental Surgeons.—Messrs. M. Alexander; E. A. Davies.

Stipendiary Dental Surgeons.—Messrs. A. B. Dalby; R. H. Bates; Charles B. Dobson.

Fees for Hospital Practice, £5 5s. per annum, or a composition fee of £8 8s. for two years' Hospital Practice required for the curriculum to students of the Medical Faculty, University College, Liverpool, and Pupils or apprentices of Registered Dentists.

Further information may be obtained by applying to the Honorary Secretary, W. L. Jackson, Central Buildings, North John Street.

PLYMOUTH DENTAL HOSPITAL (OCTAGON).

Physician.—C. Albert Hingston, M.D.

Surgeons.—Messrs. Christopher Bulteel; Connel Whipple.

Consulting Dentist.—F. A. Jewers.

Dental Surgeons.—Messrs. W. V. Moore; F. H. Balkwill; Ernest E. Jewers; Ernest Edward Jewers; Henry William Mayne; Louis E. Sexton.

Treasurer.—Alfred Payne Balkwill.

Dental School.—Certificates of attendance on the practice of this Dental Dispensary are recognised by the College of Surgeons as qualifying for the Diploma in Dental Surgery. The College also recognises the lectures delivered at the Dispensary.

Pupils of any of the Dental Surgeons of the Plymouth Dental Hospital, or other Dentists holding a Diploma of the College of Surgeons, or Member of the Odontological Society, may attend the Hospital on the day of such practitioner as may agree to accept such pupil or pupils, on the payment of £1 1s. per annum to the Institution.

Lectures.—On Dental Anatomy, by F. H. Balkwill: on Dental Mechanics, by W. V. Moore. Fee to Lectures, one course, £7 7s.;

fee to Lectures, double course, £12 12s. (required for Diploma); fee to Dental Practice at Hospital, £5 5s.; fee to entire Dental Curriculum (required for Diploma), 22 guineas.

Further information may be obtained from the Secretary, Mr. E. G. Bennett, at above address.

EXETER DENTAL HOSPITAL.

Consulting Surgeons.—Messrs. A. J. Cumming, F.R.C.S., Eng.; James Bankart, M.B., Lond., F.R.C.S., Eng.

Consulting Dental Surgeon.—S. Bevan Fox.

Dental Surgeons.—Messrs. J. T. Browne-Mason; Henry Biging Mason; S. Mundell; T. G. T. Garland; J. M. Ackland.

Honorary Secretary.—George A. Townsend.

Attendance on the practice of this Hospital is recognised by the Royal College of Surgeons of England as qualifying for their Dental Diploma.

Pupils of any member of the staff or other registered Practitioner (being a Life or Annual Governor) are permitted to attend the practice of the Hospital, subject to the approval of the Medical Sub-Committee, on payment of £5 5s. annually to the funds of the Institution. Students attending the practice of the Hospital must consider themselves strictly under the control of the Medical Officers, and must not undertake any operation without the consent of the Dental Surgeon for the day.

MEDICAL SCHOOLS.

BARTHOLOMEW'S HOSPITAL, SMITHFIELD, E.C.

Fee for general subjects for students of dental surgery:—First winter, 31½ guineas; first summer, 31½ guineas; or a single payment of 63 guineas. Dr. Norman Moore, *Warden.*

CHARING CROSS HOSPITAL, W.C.

The Composition fee for dental students is £42 2s. This may be paid in two instalments of £22 2s. and £20, at the commencement of each winter session respectively. Dr. J. Mitchell Bruce, *Dean.*

GUY'S HOSPITAL, BOROUGH, S.E.

Fee for attendence on the hospital practice and lectures required for the Dental Diploma of the College of Surgeons, 63 guineas, or in two annual instalments of 40 guineas and 23 guineas. The above fee does not include £1 10s. for practical chemistry.

Dr. F. Taylor, *Dean.*

KING'S COLLEGE, STRAND, W.C.

No special arrangements are made for dental students.

Prof. Curnow, *Dean.*

LONDON HOSPITAL, MILE END, E.

Composite fee for dental students:—Hospital practice and lectures, £42. This does not include the fee of £2 2s. for practical chemistry.

Munroe Scott, *Warden.*

MIDDLESEX HOSPITAL, BERNERS STREET, W.

Students who intend to become Licentiates in Dental Surgery of the Royal College of Surgeons are admitted to attend the requisite courses of lectures and hospital practice on payment of a fee of 40 guineas, in one sum on entrance, or by instalments of £30 on entrance, and £15 at the beginning of the second winter session.

A. Pearce Gould, *Dean.*

ST. GEORGE'S HOSPITAL, GROSVENOR PLACE, S.W.

Fee for general subjects required for the Diploma in Dental Surgery, including practical chemistry, £55; payable in two instalments: first year, £30; second year, £25. T. T. Whitham, M.D., *Dean.*

ST. MARY'S HOSPITAL, PADDINGTON, W.

Entrance fee to the general hospital practice and lectures required for the examination in dental surgery at the Royal College of Surgeons, England, £55; payable in two instalments:—First year, £30; second year, £25.

Herbert Page, *Dean.*

ST. THOMAS'S HOSPITAL, ALBERT EMBANKMENT, S.E.

The fee for attendance on the general subjects required of students in dental surgery is, for the two years, £55; or by instalments, £50 for the first year, and £10 for the second year.

E. Nettleship, *Dean.*

UNIVERSITY COLLEGE, GOWER STREET, W.C.

No special arrangements are made for dental students.

Prof. Marcus Beck, *Dean.*

WESTMINSTER HOSPITAL, BROAD SANCTUARY, S.W.

The fees for the general surgical practice and lectures required for the Dental Diploma of the Royal College of Surgeons may be paid in one of two ways, viz.:—1. In one payment on entrance, £50. 2. In two payments of £32 10s. and £20, to be made respectively at the commencement of each academic year. These payments include the library fee, and entitle the student to attendance on the tutorial classes. H. B. Donkin, M.B., *Dean.*

SCHOOL OF MEDICINE, SURGEONS' HALL, EDINBURGH.

The fees for the general subjects (including practice at the Royal Infirmary) required of dental students, according to the curriculum of the Royal College of Surgeons of Edinburgh, amount to £38 10s.

Stevenson Macadam, *Secretary.*

ANDERSON'S COLLEGE, GLASGOW.

The fees for the general subjects required of dental students, as prescribed by the curriculum of the Faculty of Physicians and Surgeons of Glasgow, amount to £25 14s. 6d. And the fees at the dental school for the special portion of the curriculum, including £12 12s. for dental hospital practice, are £23 2s.—total, £48 16s. 6d.

Dr. A. M. Buchanan, *Dean.*

GOSSIP.

ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF EDINBURGH.—At the July Examination of the above Boards Mr. James D. Ross Watt, L.D.S., passed the final examination, and was admitted L.R.C.S. & L.R.C.P.Edin.

APPOINTMENT.

John Ackery, M.R.C.S., L.D.S., has been elected Dental Surgeon to St. Bartholomew's Hospital, *vice* A. S. Mackrell, *deceased.*

A SAFE LOCAL ANÆSTHETIC.—Dr. C. T. Meaker, of Carbondale, Pa., reports in the *Items of Interest*, that a few drops of a five per cent. solution of carbolic acid in water, injected under the gum on each side of a tooth to be extracted, makes an excellent and safe local anæsthetic. Its effect, he claims, is almost instantaneous, and is particularly marked when there is swelling and inflammation about the tooth. As only one drop of carbolic acid is contained in twenty drops of the solution, the quantity used is too small to cause any constitutional disturbance.

Selections.

On the Comparative Rapidity with which Different Antiseptics penetrate Decalcified Dentine; or, What Antiseptic should be used for Sterilizing Cavities before Filling?

By W. D. Miller, M.D., D.D.S., Berlin.

The practice of superficially washing out cavities of decay before filling with some substance possessing antiseptic properties was carried out by many practitioners long before our views regarding the etiology of dental decay had taken the definite form which they now have. Many years ago a well-known teacher of dentistry remarked to me that he always bathed the cavity with creasote before filling; just why he could not tell, but he had a feeling that it might have a beneficial action,—at least it could do no harm. At present the practice is universal, and the object to be obtained is the devitalization of germs which may not have been removed by the process of excavating.

The developments of the last decade in regard to the etiology of dental decay and to the physiology of the low forms of vegetable life concerned in the causation of it, teach us that this practice is in every way commendable. The fact has been well established that many bacteria possess the power not only of living and propagating themselves, but also of manifesting their characteristic action under partial or complete exclusion of air, and even that for the existence of certain species of bacteria the exclusion of air is absolutely essential; if, therefore, we leave traces of softened dentine on the walls of our cavities, unless it has been thoroughly sterilized, even an airtight filling will be no guarantee against the progress of decay in the already softened parts. Most particularly in all cases of acute caries, where the softening has progressed nearly or quite to the pulp and the dentine is completely saturated with moisture and bacteria, if we for any reason do not effect the complete removal of the infected parts, the thorough sterilization must form the basis of all attempts at conservative treatment; otherwise we have no certainty that decomposition may not take place under the filling, leading to exposure or septic inflammation of the pulp.

I think, however, that the facts are pretty generally recognized by the profession, so that with the mere statement of them we may at once proceed to the question, With which material can we best effect the desired purpose?

In this matter more unity of practice exists than in the treatment of root canals, capping of exposed pulps, etc., the vast majority of dental practitioners being in the habit of bathing the cavity before filling with concentrated carbolic acid.

No attempt, however, has been made, as far as I know, either clinically or experimentally to determine the relative sterilizing power of various antiseptics upon carious dentine, or, in other words, which of the various antiseptics at our disposal are best adapted to the purpose and how much time they require. There are several ways in which the question may be approached experimentally, some of which I will briefly describe.

METHODS OF EXPERIMENTATION.

I.—A number of freshly extracted teeth with cavities containing large quantities of softened dentine are washed in water and placed in a vessel holding a sufficient amount of the antiseptic to completely cover them. Here they are allowed to remain from half an hour to one hour and a half or even two hours, according to the known power of the antiseptic. They are then removed with a pair of sterilized pliers, thoroughly rinsed in alcohol, which of course must be free from germs, and then again in sterilized water, the object being to entirely remove the antiseptic from the surface of the tooth. The teeth having been dried with sterilized bibulous paper, the roots are wound about with sterilized paper so that they may be held between the fingers without coming in contact with the crown. Having then some half-dozen thoroughly sterilized spoon-shaped excavators at hand, we remove the carious dentine layer after layer till we reach the bottom of the cavity, or we may succeed in peeling out the whole of the decayed dentine in one piece, care being taken not to let the instrument come in contact with the dentine at the bottom of the cavity. Of the latter a small piece is chipped out with a fine excavator and carefully conveyed to a plate of agar-agar. In like manner a second piece is put into a tube of bouillon. If now the piece of dentine becomes surrounded by a growth of micro-organisms, or if the bouillon becomes clouded, we know that the antiseptic had not completely sterilized the whole mass of the dentine. If, on the other hand, no growth takes place either in the bouillon or on the agar-agar, we are justified in concluding that the whole mass of the dentine had become permeated and sterilized.*

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*This statement would suffer a restriction if it should be found that the deep parts of decayed dentine contain non-cultivable bacteria.

This experiment requires great care, and can only be carried out by one who has had considerable experience in bacteriological work and understands how to avoid the many errors of experiment which are so liable to occur in this manipulation.

The results obtained by this method will be given in detail below. I wish only to remark in this connection that living bacteria may sometimes be found in teeth which have lain for one and three-quarters hours in concentrated carbolic acid, and that my earliest observations in regard to this matter, reported in the *Dental Cosmos* for January, 1881, are in complete accordance with the facts.

II.—The power of antiseptics to permeate decalcified dentine may also be determined by aid of the specially designed apparatus. A small glass vessel was cut in two, and the cut edges of the two halves ground so as to fit accurately together. A section of softened dentine from an elephant's tusk was then inserted between the two halves, and the latter pressed together by means of a small screw frame. Two-thirds of one half of the glass vessel was filled with the antiseptic, the other half to an equal amount with an infected solution of bouillon, and the time determined which elapsed until a sufficient amount of the antiseptic had passed through the ivory partition to sterilize the contents.

III.—Small glass vessels are filled with the antiseptic to be tested, and covered with plates of decalcified ivory of equal thickness. Upon these plates are laid a number of small pieces of decalcified ivory or dentine. As soon as the antiseptic passes through the plate of ivory in sufficient quantity to act upon the small piece of dentine, the latter itself requires an antiseptic action and consequently inhibits the growth of bacteria in its neighbourhood when it is placed on a plate of gelatine or agar agar. We accordingly take the small pieces of ivory from each vessel, one at a time, at intervals of about ten minutes, and put them upon a plate of infected gelatine or agar-agar. Any antiseptic action which the pieces may have acquired will be shown by the presence of a transparent zone around them after the plate has been kept from one to two days.

IV.—A tube of gelatine is richly inoculated with a mouth-bacterium, which grows rapidly at room temperature without liquefying the gelatine, and then poured upon a glass plate after the usual manner of making plate cultures. As soon as the gelatine has become thoroughly stiffened a large plate of decalcified ivory, which

(*To be continued.*)

THE DENTAL RECORD.

VOL. XI. OCTOBER 1st, 1891. No. 10.

Original Communications.

NOTES ON A CASE OF ALVEOLAR ABSCESS, COMPLICATED WITH REPEATED AND PROFUSE HÆMORRHAGES AND FRACTURE OF INFERIOR MAXILLA.

By HERBERT R. BOWTELL, L.D.S., Eng.

J. H., Aet. 35, was admitted into Charing Cross Hospital on August 11th, 1891, under the care of Mr. Stanley Boyd.

History :—On Friday, July 24th, patient received a blow on the right side of the jaw from a fist.

He came to the hospital on the following day, and was seen by the House Surgeon.

On examination, there was found on the right side of the lower jaw, a swelling of considerable size, which was extremely tender and painful. No crepitus or other signs of fracture could be detected, but the right lower wisdom was in a carious condition, and pus welled up between the alveolus and neck of this tooth in considerable quantity.

An antiseptic mouth-wash was prescribed, and patient advised to have his tooth extracted. When seen at the out-patients on the following day, it was found that the offending organ had been fractured, and an unsuccessful attempt made to remove the roots ; and also that the swelling was a little smaller in size, but still painful, and pus readily obtainable.

Fluctuation could be felt inside the mouth, in the sulcus, between the cheek and alveolus.

The abscess was incised, and pus escaped in fair quantity.

When patient was again seen, August 11th, it was thought desirable to admit him, notwithstanding that the swelling was slightly smaller.

Condition on Admission :—The swelling over the right postero external portion of the lower jaw was considerable, and the cutaneous area red and œdematous, deep fluctuation being obtainable, pus was still welling up from the site of the fractured tooth.

The swelling was attached to the jaw, but no bare bone could be felt through an incision inside the oral cavity.

The patient having been placed under gas and æther, I attempted (at the request of the House Surgeon) the removal of the retained roots with the elevator, but without success, a small portion of the alveolus being removed at the time.

I next incised the abscess, keeping close to the alveolar margin.

Following this operation, a considerable amount of hæmorrhage occurred ; the patient losing some 50 ozs. of blood before the bleeding could be controlled, which was eventually done with the assistance of ice bags and digital pressure.

This having been done, compressions was kept up for three hours by a cork covered with lint soaked in solution of tannin, and secured in position by means of a four-tailed bandage.

On August 18th, about a week after the foregoing operation, a pulsating swelling was discernible in the sulcus, which shortly afterwards burst, being accompanied with profuse hæmorrhage, to to the extent of 63 ozs., some shreddy pus being discharged at the same time. After this the bleeding ceased for a day.

On August 21st, owing to a severe recurrence of hæmorrhage, Mr. Boyd (after failing to secure the bleeding point, which seemed to be on the detached cheek, inside the mouth) made an incision of about 2 ins. in length along the lower border of the jaw, exposed the facial artery, and ligatured it, with the result that the bleeding from the mouth ceased.

The original wound was next plugged with iodoform gauze.

Whilst using the Mason's gag during the operation, the jaw became fractured at the site of the lesion, the fracture extending entirely through the body of the jaw, crepitus being easily obtained.

The wound having been sutured and dressed, the jaw was secured by a four-tailed bandage.

The temperature afterwards rose to 102° f., the patient being very anæmic and weak from loss of blood.

The mouth was washed out with boroglyceride, and the patient placed on a low diet.

On August 25th, the plug of iodoform gauze was removed, and the wound inside the mouth dusted with iodoform.

About midnight, the bleeding having recommenced, the patient was placed under chloroform.

Mr. Boyd then divided the lip in the mid-line, and reflected the cheek from the jaw, using and extending the incision which had been made for ligature of the facial artery.

The fracture produced at the former operation was then clearly visible. It extended in an oblique direction downwards and backwards, immediately in front of the angle of the jaw.

There was no displacement.

Above this a portion of the alveolus had been removed, and the abscess cavity exposed. By means of bone forceps the outer plate of bone was excised, and the inferior dental canal laid open.

The abscess cavity was next sharp-spooned and the retained roots removed.

On examination the inferior dental nerve and artery were found to be divided. Free bleeding had ceased, but it seemed probable that the inferior dental was the source of it.

A plug of catgut was rammed into both distal and proximal ends of the canal, and the hæmorrhage arrested.

The wound was powdered with iodoform, and the flap brought together with silver supporting sutures and a continuous horse-hair stitch. A sal-alembroth dressing was next applied and kept in position by a bandage.

Since this operation there has been no further hæmorrhage.

Remarks by Mr. Boyd :—

To the surgeon the interest of this case lies in the repeated hæmorrhages and their treatment. From Mr. Bowtell's account it seemed highly probable that the facial had been wounded in opening the alveolar abscess ; and this view seemed to be supported by the formation of an arterial hæmatoma between the cheek and the jaw, the wound into the abscess cavity having healed to some extent so that blood was prevented from at once escaping externally.

On August 21st I was in the hospital when this hæmatoma burst, and on running to the patient found blood literally streaming from his mouth. I at once concluded that only the facial could yield such a stream, and when I at first got a good view of the cavity inside the cheek I saw blood issuing in a thickish column apparently from the cheek. I enlarged the wound in the mouth and tried to grasp the vessel with forceps; but after a few vain attempts, the bleeding was reduced to a general oozing (owing to the depression of the heart by the chloroform ?) and by no sponging or scraping of the surfaces could I make it bleed again. Under these circumstances I determined to tie the facial where it crosses the jaw—within half an inch of the bleeding spot. I was afraid to leave the patient open to the risk of fresh bleeding (he had lost at least 120 ozs. of blood in ten days) and I felt that if ligature at a distance from the bleeding spot could be relied upon at all this was the very case for it. On August 25th I was sent for at midnight, bleeding having recurred as freely as ever; many ounces of blood were lost before my house surgeon could reach the patient and plug the cavity in the mouth with his finger. The facial wound was healing nicely: we had not now to deal with secondary hæmorrhage from that vessel. As usual, bleeding had practically ceased when I arrived. Feeling that I must do everything in my power to find and deal with the bleeding point, I raised a flap, as for excision of the right half of the body of the jaw, and could find no bleeding point in its deep surface, but slow oozing was going on from the cavity in the bone which was full of clot. This was cleared out with a sharp spoon after I had cut away the outer plate of the jaw. I then found the two ends of the divided inferior dental nerve, the ends of the artery having retracted within the dental canal. I imagine that the complete division of the nerve was effected by the spoon; I thought that possibly the blood had come from a lateral wound in the artery. Unfortunately, there is no proof that the inferior dental was the vessel wounded, were there such, the case would be a striking instance of the fallacy which underlies the treatment of hæmorrhage by ligature at a distance.

Altogether, this man must have lost 150 ozs. of blood between August 11th and 25th, yet his condition after the last bout and operation was not such as to make me really anxious about him.

IS DENTISTRY A DANGEROUS PROFESSION?

By Dudley W. Buxton, M.D.,Lond., B.S.
Member of the Royal College of Physicians.

Some few years back Mr. Oakley Coles, then a leading member of the dental profession, brought before the Odontological Society of Great Britain the subject comprehended by the question which stands as a caption to the present article. It may appear an unnecessary, nay even a frivolous, theme upon which to occupy the valuable hours of our already overburdened lives, but I venture to think that a few moments of thought will enable us to show the question is no mere mental gymnastic, and that in its answer is involved the happiness or misery of many, while to discuss what is a natural pendant to our theme, the hygiene of the dentist's life involves matters of the utmost importance to the busy brethren who form the dental profession. It has been alike my duty and my privilege to work with and watch at the bedside of not a few dentists and dental students, and the knowledge thereby gained has set my mind athinking again and again upon the problems how should a dentist live so as to gain health and retain it, in what manner may he obtain the greatest amount of work with the least amount of wear and tear.

It must I think be conceded that the life is a hard one, not so much from the length of time during which the individual is called upon to work as on account of the physical sameness, the unequal distribution of muscular strain and the tension involved in conscientious discharge of the duties comprising the diurnal life of the ordinary dentist. Again the work is all indoors and is carried on in more or less tainted air. Over and above these drawbacks to the calling there are those which involve his nervous system, congestive neuritis from standing in one position, the strain to the eyes and the nerve tension incident to due co-ordination of eye and hand involved in the accomplishment of fine and delicate manipulative dexterity. Probably no profession takes quite the same position as regards its effects upon health as dentistry, and I venture to think none offers quite so many opportunities for noxious influences to attack the individual. Luckily, however, that even with this proneness to run off the rail of health, the life of the dentist need not be really unwholesome. There are pitfalls it is true, and these are numerous as well as dangerous, but Nature kindly gives us excellent warning notes of danger, and we possess knowledge adequate to grapple with the troubles which arise, and still better, enables us being forewarned to be forearmed by calling in the assistance of prophylactic methods and relying upon the plain teachings of hygiene.

It would be folly to attempt to lay down hard and fast rules for men who although following the same calling yet differ so widely alike in the exigencies of their circumstances, in their tastes, and in their physical equipment. To suggest various plans for lessening the evils may subserve a useful purpose, while the adaptation of the rules themselves to suit variety of circumstances must be the work of the individual. What has struck me has been the prevalence of neurasthenia, nervous irritability, diseases clearly traceable to impaired nourishness of the nerve centres, and peripheral nerves showing themselves in neuralgias, *e.g.*, migraine, sciatica, herpes zoster, asomnia, etc., etc.; all evidences it will be said of chronic overwork, but when we find them occurring in persons whose hours of labour are not unduly prolonged, we are compelled to believe that the nature of the work rather than its quantity is responsible for its bringing about these untoward results.

To secure immunity from neurasthenic troubles, *i.e.* from affections or diseases, the result of nerve exhaustion, certain precautions should be taken, and these we propose to consider. (1.) number of hours of continuous labour. (2.) change of work. (3.) clothing. (4.) arrangement of day. (5.) hygiene of work room. (6.) recreation.

In considering the first heading, it is a very difficult matter to be more than vague, and therefore unsatisfactory. Some men can take appointments from 9 a.m. or even 8.30 until 6 or even 7 at night, trusting to the "slack time" for easying off, and do not, to the casual observer, appear to suffer. That they do themselves an injury eventually I have no doubt, and I believe, were we able to get at reliable life insurance official statistics we should find that the expectancy of life of such persons is certainly lessened. However, the number of dentists is too few to base any conclusions upon insurance figures, the more so as I find, that as a profession, they are not provident in the sense of insuring at all adequately, when it is considered that they make relatively large salaries or incomes early in life, and so marry young. Another flaw in this way of getting at the truth about the longevity of dentists is that the affections noted above are perhaps actually less inimical to life than to health, most tend, that is, to bring about rather a condition of chronic invalidism, than to determine premature decease. Providence against sickness, involving the principle of paying yearly premiums to secure a certain weekly allowance during partial or complete disablement through illness has not until within the past few years taken any hold upon the medical profession, and although the various offices now undertake the underwriting of these health risks, there is no special one for dentists as there is for members of the British Medical Association. The Benevolent Fund, that wise provision of the corresponding Association of Dentists works I believe upon eleemosynary lines, and therefore, of course, does not take the place of an Insurance association against sickness, injury or death. If an engineer, or constant traveller should insure against accident, certainly the dentist should against sickness.

The average health limit of continuous work should be fixed at six hours a day, the hours of labour over this limit are of inferior quality *as a rule*, of course many exceptions occur. A senior student at Cambridge, who subsequently came out senior wrangler, was asked by a "ten-hour man" how it was he read for "only five hours a day," and his reply, that although he read five hours only, yet while he read, he *read*, applies with equal force to other matters besides reading for examinations. There is a great deal of very indifferent work done by professional men, not perhaps done dishonestly, but nevertheless scamped work, and this is the direct result of an attempt to get through more than the tired hand and unnerved brain are capable of duly carrying out. Hard workers will readily agree that it is futile for them to look forward to "slack times" for recuperation, for, like a falling body, the hard worker gains momentum, as he travels along, the habit grows, and when the slack time arrives, a hundred and one thing intrude themselves into the day's routine, and transform its anticipated leisure into as great a stress of work as usual, for these additional things which have to be done must be deposed of before the "busy time" again comes round. Thus it happens that unless the hard worker makes a determined stand, and reduces by scale the hours in which professional work is to be done, he never gets free from, and as year succeeds year, he grows more than ever the slave of his profession. Hence the absolute importance of restricting the hours of labour. Then comes the question of income. It certainly is a fallacy to say that given a limit set to work, an equivalent amount must be written off the earnings. What has been shown in the great labour movements applies to professional men. In a factory where overtime was habitually paid, and men laboured for 11 to 14 hours daily, an eight hours limit was experimentally tried, and the wages fixed at a rate which was equivalent to those given for the long day's labour plus the overtime. The employer did this expecting to lose heavily, but to his surprise he found the men actually got through more and better work during the 8 than they had hitherto done when slaving on through 14 hours. So the professional man will, I venture to think, find that both the quality and quantity of his work will really be increased, if he limits his hours. To insure this, however, there must of course be time-saving appliances, appointments must be kept alike by patient and dentist, and when possible, the hall attendant or secretary must see that all preliminaries are duly attended to before the patient enters the operating room. Patients soon learn to respect punctuality, and the more readily apprehend its importance if sins of omission are made to involve an equivalent loss of time allotted to them while their fees are still exacted. Here again, a most important point is that the monetary arrangements should, when possible, be taken out of the hands of the principal. In this regard, it may be said, that for young men commencing practice, it is childish to suggest the keeping of a secretary, or official collection of fees and professional charges, nor do I deny that it is so, but such junior men have the leisure for such administrative work, and should carry it out, and only hand it over to others when their time becomes sufficiently valuable to demand outside help. This point is, I submit, reached, when six hours a day *good* work is required at their hands. All details of work, such as having instruments arranged orderly and at hand, bottles duly filled and properly arranged, everything in its right place, and that right place known, and all apparatus, water, electric, etc., in perfect order are presupposed, for the man who muddles his surgery will certainly muddle his work, and will as indubitably lose more time than he uses.

When we speak of change of work or variety of occupation, it is assumed that the cares and duties of the profession are not allowed to monopolise all the working day. Recreative work, provided it does not tax the same senses in the same way as do the routine duties of life, is certainly a benefit to the individual, and can moreover be made to indirectly assist his life's work by cultivating his eye, or his touch, etc. Thus the pursuits of art, painting, etching, photography, undoubtedly assist indirectly the dentist, just as a few hours at the engineer's bench, or with the lathe, strengthen while they give him manipulative dexterity. Even in change of work there is a danger, for unless due care be exercised the point of physiological equilibrium is overstepped, and instead of the "off" work being recreative it becomes exhausting, and so, detrimental.

Upon the matter of clothing, much stress was laid when Mr. Oakley Coles' paper was read upon the necessity for warm and absorptive undervesture, and there is an undoubted need of this. The equalising of temperature which the skin has to perform is assisted by the use of Jäeger, or some such system of clothing, but there is another and none the less important point, which is, that a complete change of costume be made after the day's work. The operating room should be kept at a lower temperature than ordinary dwelling rooms, and hence the dress of the dentist should be warmer than his usual habiliments, and of course warmer than his outdoor dress.* The working dress should be loose, the feet and wrists and throat should be well protected, and straps or tight bands or badly designed braces carefully avoided, as in a constrained position bands become tight, which are loose enough when the body is held erect. Great care should be used to avoid bad habits as regards standing, *e.g.*, cramping postures, stooping, and especially permitting the weight of the body to rest for long upon one leg. The dentist's stool of course obviates much standing, but very many dentists find its use more irksome than standing. The ambidextrous have a decided advantage in being able to alternate their work.

The arrangement of the day is no unimportant detail. Whatever may be the hour fixed for starting work it should be preceded by a good breakfast and walk, or better still ride either upon a horse or a cycle. Gentle exercise is what is required, anything beyond this means unsteadying of the hands, and many persons find cycling in the early morning causes too much fatigue and tremulousness of the hands. When this is so, walking for a mile or so should be adopted instead of it. An early rise, a cup of milk, and a piece of bread and butter, then the walk to be followed by a bath and breakfast is the best routine. Letters can then be glanced at and arranged to be dealt with subsequently. The day's work begun should not be continued for more than four hours without a break. The mid-day interval allows for a light luncheon, many find a biscuit enough, but when a more substantial lunch, *e.g.*, fish or fowl with rice, or other farinaceous pudding can be taken without inducing sleepiness or languor, it is better than the lighter repast, since that leads to an excessive dinner, which taken at 7 p.m. or 8 p.m., entails a severe tax upon the digestive functions. It is a common, but most objectionable practice for persons who have no appointment to call during this mid-day hour, upon the chance of "catching" the professional man, this should be ruthlessly checked. The professional day should close about 5 p.m., and steady exercise in the open air must be taken, whether wet or fine, and the dinner taken not later than

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*In outdoor exercise, whether walking, or riding, or cycling, the clothing if absorptive need not be very warm.

8 p.m., although 7 p.m. is a better time, as if the rational rule is followed of retiring to bed at 11 p.m., three good hours are thus afforded for digestion. Eight hours sleep is a proper allowance, and unless something like this be taken, asomnia and mental irritability are liable to show themselves. The physical fatigue of the day's work often leads dentists to forego walking and betake themselves to driving. As a matter of fact, this is a mistake, the fatigue felt is really not fatigue, but is rather exhaustion of brain, coupled perhaps with a little straining of one set of muscles. If this feeling is combated and the walk persisted in, there will follow in most cases a reward, and that is, the fatigue rapidly wear off and exhilaration succeed. The nearest high ground and open space should be selected for the walk.

Upon the subject of the hygiene of the surgery, very much might be written. The best light comes from a north or north-eastern aspect, glare is a danger to be carefully avoided, especially when refractive ocular troubles exist, such as astigmatism, but while too strong an illumination should be avoided, on account of the fatigue incident, under these circumstances to the retina, equally a dim light should be avoided, as it engenders ocular disease by strain, often revealing itself in headache and visual vertigo. Ventilation should occupy an important place in the arrangement of a surgery. Ventilation, not draught, is the desideratum, and the periodic introduction of a small hurricane into the room, by throwing open doors and windows, is a mistake and a dangerous nuisance. A fire-place and an open window guarded by a board, placed in its plane to prevent a direct inrush of air, constitute a simple and effectual system of ventilation, when the more elaborate system of Tobin's tubes are not available. Unshutable sources of ventilation are preferable to others, as most persons have a morbid dread of fresh air, and will, if they can, get a room stuffy. But flap windows falling from above, and even revolving window-pane plates have their uses. Heavy carpets and much furniture, especially if carved, are agreeable to the æsthetic sense, but are out of place in a hygienic surgery, as the most conscientious cleaner cannot keep the place free from dust and dirt from carious teeth, and lung exhalation is not devoid of danger to those who spend many hours in its neighbourhood. Painted walls, polished floors, and matting capable of daily or at least frequent wiping down, with a minimum of stuffed furniture, and an exclusion of saddle-bag settees constitute, I venture to think, a good general outline of what we should find in a dentist's room. Books, heavily framed pictures, shields, etc., should not be allowed. The light need hardly now be dwelt on, for most persons fitting up their houses would employ electricity both for light and motor. In other cases, gas may be used, but only after consultation with a gas engineer, for although gas may be feeble as an illuminator, hurtful as a calorifier, and harmful from a health point of view, it need be none of them. With care it may afford a splendid light, be made an efficient means of ventilating, and be excluded from the respirable air of the room. The Wenham system, when the rooms are large enough is a good one. Uncovered gas jets are bad in economy, deleterious to the eyes and the health. Open fire-places afford the best, although perhaps the most costly mode of warming, many gas stoves are good, but they need careful working, and it is difficult not to get a used-up condition of the air. Sprays of some terebinthine compound such as sanitas, terebene, pumiline, or better still the occasional burning of a few logs of Scotch pine, give an agreeable odour and ozonise the air of the room. The large amount of putrescent material which must circulate in the atmosphere of the dentist's room, and find its way into his own lungs as he inhales the breath of his patients should make him most careful to adopt such precautions. Bacteriology teaches us practical lessons, and one seems to me to be that the dentist's work brings him into constant contact with those mischiefs which, nature yet leaves for idle germs to do.

Many operators adopt a very bad habit of holding, or half-holding their breath while operating this is decidedly injurious, as it diminishes the air supply to the lungs, and interferes with due depuration of the pulmonary air.

Much stress must also be laid upon the importance to dentists of gymnastic exercises. "I am no athlete," may be said, but no one is too old or too stiff to use dumb-bells and light clubs. These must however be skilfully handled, and graduated exercises learnt or schemed to open the thorax, and ensure a daily thorough wash-out of the pulmonary vascular system, and so obviate stagnating pulmonary apices.

When we turn to consider recreation, we find much again to say, but space compels me to curtail my remarks. I would preach moderation in all things, lest the fate which befell the literary lady befalls the more energetic of dentists. Writing with enthusiasm for far longer hours than her brain could properly accomplish, she took her leisure in hoeing potatoes and digging, and in these pursuits her energy again hurried her into excesses, resulting in a paralytic disease, which in time crippled alike her mind and her body. Outdoor pursuits of course stand first, air and exercise, cycling, riding, or when the weather is perverse, rackets, and failing these, a good walk and a Turkish bath stand pre-eminent for exercise. Mental recreation, I will not venture to insist upon, as in these days of culture, everyone reads, and some few think, while yet fewer go first hand to Nature for her enchanting teaching. The same hedgerows which spoke to poor Richard Jeffreys are yet eloquent for those who have ears to hear; the sunsets which inspired Turner are still occurring day-by-day; while in London, and the other great cities, Nature is not wholly stamped out, but offers food for thought, work for the microscope, the pencil and the brush, and our great cities also afford opportunities for hearing such music as may well make one rejoice in living. What more need I say? Possibly it will be replied by the cynic that enthusiasm on the matter of music, and of Nature's teaching is out of date, if it be so, I trust someone will have the courage to put back the hands of the clock, that we may all again grow as enthusiastic in our play as in our work, for after all, enthusiasm only means putting one's whole energy into the matter, and without energy, the spice of life has gone, and the work becomes slave's toil, while the play is a sorry travesty of mirth.

REPORTS OF SOCIETIES.

ACCOUNT OF EXHIBITS AT BRITISH DENTAL ASSOCIATION MEETING.

The exhibits formed no unimportant portion of the meeting. The large hall, 100 ft. long, with light on both sides, gave ample opportuntity to the appliance manufacturers for the display of their productions. The apportioning of space and other arrangements in the hands of Mr. Paterson, the hon. secretary, gave general satisfaction. The room was divided down the centre, and one side divided equally between Messrs. Ash and the Dental Manufacturing Company, Limited; the other side of the room being occupied by

Messrs. Rutterford, Jamieson, Collins, Hallam, Borroughs Wellcome, Harvard Chair Company and others.

Messrs. Ash and Sons had, as usual, a good selection of their manufactures, including the regular line of chairs, cabinets, instruments, &c., and in addition they exhibited Dr. Campbell's Horizontal Wheel Engine, which was much admired, altogether their exhibit had an imposing appearance.

The Dental Manufacturing Company had also a fine display of instruments and regular goods. Their NEW DENTAL CHAIR attracted much attention; its movements are novel, some have been very much needed by the Dental Surgeon. It appeared to combine steadiness, with rapidity of motion, great range, and much comfort to the patient. It was so generally approved that we understand quite a number of orders were booked for it. Their NEW CABLE ENGINE, wherein the cable, when at rest, is always vertical, and unable to become kinked is an improvement; those on view ran smoothly and were evidently well made; they are capable of being used much lower than other engines. A large assortment of cases mounted in GEAR'S SHADED RUBBER proved extremely useful, showing the profession the very beautiful effect obtained in practical work. Specimens of the NEW TEETH were shown, and elicited general admiration. Mr. COXON'S NEW APPARATUS for prolonging anæsthesia under nitrous oxide gas was exhibited and is likely to prove valuable to the profession. We understand that successful demonstrations with the apparatus were given later. The MODIFIED MORRISON CHAIR, which is evidently destined to supplant all the so-called *cheap* chairs at present on the market was also a feature of the Company's exhibit. Dr. Campbell was present and explained the advantages of his New Teeth, which had been manufactured by the Company, he also exhibited his latest Dental Engine, a beautiful running Machine.

Mr. Jamieson exhibited, amongst other things, his cordless Engine, which seems to be an improvement on earlier samples.

Mr. Rutterford had a nice little display of general goods, as had Mr. Collins, Mr. Hallam and others. The "Case" Dental Chair was shown; it has a great variety of movement, but needs simplifying to render it of service to dentists.

Altogether the exhibits were worthy of the occasion, and added much to the success of the meeting.

Selections.

On the Comparative Rapidity with which Different Antiseptics penetrate Decalcified Dentine; or, What Antiseptic should be used for Sterilizing Cavities before Filling?

By W. D. Miller, M.D., D.D.S., Berlin.

(Continued from page 432.)

As soon as the gelatine has become thoroughly stiffened a large plate of decalcified ivory, which must be entirely free from acid, is placed upon it; any air-bubbles which may become enclosed must be got rid of. Upon this plate we place a number of pledgets of cotton saturated with various anti-septics, and cover up the plate with a bell-jar or an ordinary glass cover, kept moist on the inside by a lining of wet bibulous paper (to prevent the warping of the plate of ivory). After any determined time carefully peel off the ivory plate from the gelatine, and put the latter away in a moist chamber. In twenty four to forty-eight hours the plate will be densely clouded, except at those points where the antiseptics from the pledgets of cotton have passed through the plate of ivory in sufficient quantity to prevent the growth of the micro-organisms in the gelatine; these points will be marked by a circle of transparent gelatine.

I have found this method to be the simplest and most easy of carrying out; it should not, however, be relied upon alone, but should always be controlled or checked by parallel experiments by the other methods, particularly by method I.

There are still other ways of carrying out these experiments, some of which I have also made use of, but those already given will suffice, I think, to show the principles involved.

Results.

One general result of these experiments already referred to above is the establishment of the fact that the thorough sterilization of decayed dentine requires more time and care than we are accustomed to bestow upon it.

If we wish to be sure that we have completely sterilized a layer of dentine 1 mm. thick with carbolic acid, for example, we must allow the solution to act at least three-quarters of an hour; nor does it suffice simply to moisten the surface with the acid; the whole cavity must be thoroughly bathed with it. Simply wiping out a cavity with carbolic acid and immediately drying it gives no guarantee whatever that any softened dentine present has become sterile.

Up to the present time I have tested the following materials: 1, chloride of zinc; 2, five per cent. solution of bichloride of mercury; 3, five per cent. solution of trichloride of iodine; 4, five per cent. solution of pentachloride of phosphorus; 5, double chloride of gold and sodium; 6, double chloride of potassium and platinum; 7, trichlorphenol: 8, carbolic acid; 9, lysol; 10, peroxide of hydrogen; 11, oil of cinnamon; 12, oil of cloves; 13, oil of peppermint; 14, oil of wintergreen; 15, pyoktanin; 16, resorcin, ten per cent. solution; 17, benzoic acid, ten per cent. alcoholic solution; 18, absolute alcohol; 19, thymol, twenty per cent. alcoholic solution. Of those substances just mentioned which have not been used in dental surgery, or received notice in the dental periodicals, I wish to call particular attention to the *Trichloride of Iodine.* This preparation was recommended as an antiseptic by Riedel and Langenbuch in 1887. It is a brick-red powder which has an irritating smell of chlorine. It may be had in quantities of ten grammes in hermetically sealed tubes, and is best kept in five per cent. aqueous solutions, which appear to remain unchanged indefinitely, or at least for some months, though I have sometimes noticed a slight increase in the acidity of the solution. Langenbuch* claims that a 0.1 to 0.15 per cent. solution is equal in antiseptic action to a 0.5 to 1.0 per cent. solution of bichloride of mercury; in other words, that it is about five times as efficient as the bichloride. The five per cent. solution has but slight escharotic effects when compared with concentrated carbolic acid.

In order to compare the two, I put a drop of carbolic acid upon my arm and near it a drop of five per cent. solution of trichloride of iodine: the result, as expected, was a disagreeable wound produced by the carbolic acid, but not a trace of any action on the part of the trichloride.

It is also claimed by prominent authorities to be *relatively* the least poisonous of all antiseptics. Behring† found that *in aqueous solutions, having equal action upon the spores of anthrax bacilli*, sublimate is five to six times, and carbolic acid and creasote seven to eight times, as poisonous as the trichloride.

We have consequently reasons to hope that the trichloride of iodine may prove a valuable remedy in the treatment of diseased conditions of the teeth and mouth. I have begun to use it in the clinic of the dental institute, and shall report the results in connection with experiments which are being carried on in the laboratory.

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* "Ueber die Brauchbarkeit des Iodtrichlorids als Desinficiens und Antisepticum." *Berl. Klin. Wochenschrift*, No. 40, 1887.

† "Über Desinfection, Desinfectionsmittel und Desinfectionsmethoden. *Zeitschrift für Hygiene, Bd.* 9, 1890. pp. 395—478.

Its efficiency as a disinfectant for carious dentine was tested six times by the first method and thirty-five times by the fourth.

The first method also gave good results, though not quite so striking as those obtained by the fourth. The impression gained on the whole was that the five per cent. solution of the trichloride of iodine is one of the most active agents at our demand for effecting the purpose in question.

I will not fail, however, to call attention to the fact that this solution has a distinctly acid reaction which must be taken into consideration in attempting to put a proper estimate upon the value of any substance to be used upon the teeth.

The Bichloride of Mercury, which usually ranks as the king among antiseptics, was tested by each of the four methods, in all sixty-three times, with uniformly good results, although particularly in method IV. it fell considerably short of the striking action shown by the trichloride of iodine.

The pre-eminent position held by the chlorides among the antiseptics suggested the thought that other chlorides, containing a still higher number of atoms of chlorine, might have a still more powerful action. I was accordingly led to make a test of the *pentachloride of phosphorus*, which, tested by method IV., proved to have a penetrating action superior to that of the bichloride of mercury, but not, however, equal to that of the trichloride of iodine This fact is interesting chiefly from a theoretical stand-point, since the intense acid reaction of the pentachloride renders it unfit for use in the mouth.

The Peroxide of Hydrogen was tested thirteen times by method I., and fourteen times by method IV. The results obtained by the two methods were strikingly at variance with each other : tested by method IV., it appeared to be one of the *most* active of the substances employed, whereas the first method showed it to be one of the *least* active. Two possible ways suggest themselves for accounting for this discrepncy. Either the products of decomposition present in thea superficial ars of the ldeeycayed dentine disengage the atom of oxygen, which then excapes, leaving only the remaining portion of the molecule (*i.e.* water) to act upon the deeper portions of the dentine, the result being that while the superficial layers are speedily sterilized, the deeper ones are reached only by the inert water; or, secondly, we may suppose that the bacterium made use of in the fourth method is peculiarly sensitive to nascent oxygen, hence the striking action of the peroxide. I rather incline to think, however that the first explanation suggested is the proper one, and that the peroxide, while an excellent sterilizer for thin layers, fails when applied to thicker ones.

Carbolic Acid was tested fifty-nine times: fifteen times by the first method, twice by the second, twice by the third, and forty times by the fourth. The results obtained harmonized pretty well throughout, and showed that while the carbolic acid is a very active antiseptic agent, it falls considerably behind the bichloride of mercury and trichloride of iodine in its penetrating power.

Trichlorphenol and Lysol, the former of which was tested eleven times, the latter but four, gave results very similar to those obtained by carbolic acid.

Chloride of Zinc in a supersaturated aqueous solution was tested by methods I. and IV. By the latter it falls somewhat short of carbolic acid, by the former it quite equals it, if indeed it does not slightly surpass it. Its exceeding escharotic action and the pain often attending its application to the nearly exposed pulp in my opinion more than counterbalance any slight advantage that it might otherwise have over carbolic acid.

The Essential Oils proved to be among the least efficient of the substances examined. In none of the tests made did the oils of *peppermint*, *cloves*, and *wintergreen* show any action whatever. In a few the oil of *cinnamon* turned out a little better, but its action was very slight when compared to that of the trichloride of iodine, bichloride of mercury, etc. In the figure, illustrating method III., it will be seen that the trichloride of iodine (*a*, *a*1, etc.) had about the same effect in fifteen minutes that the oil of cinnamon (*c*, *c*1, etc.) had in forty minutes.

Likewise, method IV., we see the striking action of the trichloride and bichloride and the slight action of carbolic acid in twenty-five minutes, while in the same time the oil of cinnamon failed to exert any retarding influence upon the development of bacteria. In sixteen tests with various essential oils by the first method, in which the teeth were allowed to remain one and one-quarter to one and three-quarters hours in the oil, I found, without exception, *living* bacteria in the dentine at the close of the experiment.

Pyoktanin, *benzoic acid*, *alcohol*, *thymol*, and *resorcin* need not be referred to separately; they all fell so far short of the standard of efficiency manifested by other antiseptics, that they could not come into consideration at all for sterilizing cavities before filling. The same is true also of the double salts mentioned under V. and VI. I should add, however, that pyoktanin, resorcin, and the double salts were tested only by method IV.

I may say in reference to pyoktanin in this connection that I have tested its power in other directions, and always found it undeserving of the high praise which it has recently received in America.

In carrying out the experiments described, three hundred and fifty-four tests were made; of these fifty-nine related to carbolic acid, sixty-three to sublimate, twenty-seven to peroxide of hydrogen, thirty-eight to chloride of zinc, eleven to trichlorphenol, fifty-four to oil of cinnamon, five to oil of cloves, ten to oil of peppermint, four to oil of wintergreen, three to benzoic acid, three to thymol, one to alcohol, four to lysol, forty-one to trichloride of iodine, seven to pentachloride of phosphorus, twelve to pyoktanin, eight to the double salt of gold and sodium, two to the double salt of potassium and platinum, and two to resorcin.

It may no doubt seem to most readers that *three hundred and fifty-four* experiments ought to definitely settle the question at issue, but to those who have been engaged in work of this nature for some time it will not appear so very strange that this should not be the case, but that more experiments should be necessary before the subject can be dismissed. It is therefore possible that the conclusions arrived at as the result of the above work may be modified by further experiments in the same direction. I am inclined to think, however, that the general results may be relied upon.

These are: 1. The complete sterilization of cavities of decay, especially such as contain traces, or even considerable quantities, of carious dentine, requires much more time than we are accustomed to give to it. When we have to sterilize a layer of some thickness, it is advisable, or we may say necessary, to apply the antiseptic on a pledget of cotton, and seal it in the cavity with the oxysulphate of zinc for one-half to one hour (or protect it in any way from the access of saliva) while some other operation is being performed.

In bad cases of acute caries, for example on the buccal surface of upper third molars, I not infrequently apply the antiseptic and leave it over night, in which case it must of course be protected by the oxysulphate, which is the only substance we possess which is at all adapted for inclosing applications on cotton.

2. The best results are obtained, as we should naturally expect, where rapidity of action is desired, by substances which are readily soluble in water ; it is for this reason, I take it, that the essential oils manifested so little action, their insolubility in the juices of the dentine preventing their rapid permeation of it.

In regard to the special results of these experiments I am, as intimated above, not quite prepared to express a decisive opinion, and reserve the right to modify my present views in any subsequent communication. At present I should head the list with the *trichloride of iodine*, were it not for its acid reaction, in regard to which further investigations are necessary.

There can also be no doubt about the powerful action of a five per cent. solution of the *bichloride of mercury*. The only question here to be taken into consideration is whether it might not lead to a slight discoloration of the tooth. This I doubt, though it might be advisable to restrict its use at first to the molars.

I do not consider that there is any danger attending the application of a pledget of cotton saturated with a five per cent. solution to a cavity of decay, as such a pledget would contain but a fraction of the usual internal dose of the bichloride, and might even be swallowed with impunity. I myself have used still stronger solutions in connection with the teeth.

As for the *peroxide of hydrogen*, which is one of the most agreeable of all our antiseptics, I am inclined to think that where *but very minute traces* of carious dentine are to be sterilized a ten per cent. solution of it will act efficiently.

Where the antiseptic may be left for some time, particularly over night, concentrated carbolic acid will be sufficient to effect the sterilization, provided the cavity has been at least partially excavated before application. The pledget must, however, be well saturated with the solution, otherwise the quantity will be too small to permeate more than a thin layer of dentine. It has the advantage of obtunding the dentine at the same time, while an injurious action upon the pulp is not to be feared, except it be almost or quite exposed. I shall return to this subject in a subsequent article.—*Dental Cosmos.*

The Human Mouth as a Focus of Infection.

By W. D. Miller, M.D., D.D.S., Berlin.

During the last few years the conviction has grown continually stronger, among physicians as well as dentists, that the human mouth, as a gathering-place and incubator of diverse pathogenic germs, performs a significant rôle in the production of varied disorders of the body, and that if many diseases whose origin is enveloped in mystery could be traced to their source, they would be found to have originated in the oral cavity.

It shall be my endeavour in the following pages (1) to call attention to the various diseases, both local and general, which have been found to result from the action of micro-organisms which have collected in the mouth, and to the various channels through which these micro-organisms or their waste products may obtain entrance to parts of the body adjacent to or remote from the mouth. The secondary nervous affections due to diseased teeth will not receive consideration ; (2) to present in very brief form the present condition of our knowledge of the pathogenic bacteria met with in the mouth and the means at our command for combating them. I shall refer only cursorily to those topics which are of minor importance, or which have already become familiar to the profession through the periodicals, text-books, etc., giving more attention to those which are still subjects of study. I hope finally to be able to add some results of original investigations in this field, which may help to establish the great importance of a thorough understanding on the part of the physician, no less than of the dentist, of mouth-germs as a factor in the production of disease. The subject will be presented under the three following heads :

I. Disturbances of the Human Body which have been traced to the Action of Germs growing in the Mouth.

II. The Pathogenic Mouth-Bacteria.

III. Prophylactic Measures.

I. Diseases of the Human Body which have been Traced to the Action of Mouth-Bacteria.

1. *Decay of the Teeth.*

In conformity with the nearly unanimous verdict of all recent investigations, decay of the teeth must be set down as the most widespread of all parasitic diseases to which the human body is subject ; and, although, as far as the life of the patient is concerned, the prognosis is exceedingly good and decay of the teeth may be pronounced one of the most trivial disturbances in the human economy, yet, if we take into consideration the results which follow a case of general decay, particularly in the mouth of young or weak persons, it often becomes a disease of very grave nature.

I venture to say that most practitioners of dentistry will agree with me that the havoc wrought by dental caries in the mouths of vast numbers of children, or even adults, among the lower classes is a much more serious thing than an attack of chicken-pox, rubeola, or even measles.

2-4. *Pulpitis, Gangrene of the Pulp, Pericementitis.*

Inflammation of the dental pulp, with the exception of the comparatively few cases where it is the result of trauma or of calcareous formations in the pulp chamber, erosion, abrasion, etc., is due directly or indirectly to parasitic influences, while gangrene of the pulp can never have any other origin under any circumstances.

Pericementitis apicalis, the form of pericementitis which is most severe and gives rise to the most serious consequences, is likewise of parasitic origin, being produced by germs or their products, or by both together passing from the root-canal through the apical foramen.

That the pain attending a severe case of pulpitis or pericementitis is of usually so intense a character as to make it a very serious matter to the person who has to bear it, is too well known to need any comment. That the sufferer usually receives so little sympathy is to be accounted for by the fact that the direct mortality is almost zero, while the eventual loss of the tooth is often short-sightedly regarded as a matter of little consequence, in consideration of the fact that it is only one of a large number, and may eventually be replaced by a better one of porcelain, which cannot ache.

5. *Alveolar Abscess.*

Alveolar abscess is an infectious disease, primarily of a local character, but frequently, or usually, accompanied by general symptoms of varying intensity, and sometimes attended by complications of a most serious nature. Severe cases of alveolar abscess, particularly in weak persons, not unfrequently present symptoms of an alarming nature. The extensive œdema, general debility, fever, chills, forcibly suggest the thought of a general infection, which, it must be admitted, is always possible where large masses of pus accumulate about the point of the root.

Leaving out of account for the present the more common complications of alveolar abscess, I wish to call particular attention to the many cases in which it has terminated fatally through the supervention of septicæmia or pyæmia.

It must be constantly born in mind that wherever micro-organisms are accumulated in large masses in any part of the body, the possibility of their being carried to other parts through the blood or lymph channels, and of their producing, accordingly, metastatic abscesses wherever a point of diminished resistance exists, can never with certainty be excluded. It has been repeatedly observed that most stubborn cases of chronic pyæmia, which have baffled all attempts of physicians either to cure them or to determine their cause, have disappeared on the removal or proper treatment of a diseased tooth. In like manner, general blood-poisoning (septicæmia), with speedily fatal termination, has been seen to result from accumulations of infectious material about the roots of a tooth.

6 and 7. *Osteitis, Osteomyelitis.*

Osteitis and osteomyelitis belong to the more common complications of decay of the teeth. Every severe inflammation of the pericementum is naturally accompanied by more or less inflammation of the bone-marrow, or of the bone (osteitis), or of both together (osteomyelitis). Severe cases of osteomyelitis, fortunately of comparatively rare occurrence, are of exceedingly doubtful prognosis. Schede reports nine cases, of which all but one ended fatally, death resulting from acute or chronic sepsis, or from a spreading of the infection through the floor of the mouth and retrotonsillar tissue into the mediastinum, setting up pleuritis, pericarditis, etc., with purulent exudations.

8 and 9. *Periostitis and Necrosis.*

A slight inflammation of the periosteum of the alveolar process and a slight necrosis of the bone necessarily accompany all abscesses in which the pus makes its way to the surface of the bone ; ordinarily, however, the symptoms are of minor importance, and disappear as soon as the pus has discharged through the gums.

Not unfrequently, however, periosteal inflammations resulting from caries are of an exceedingly violent character ; intense, continuous pain, often lasting for days, enormous swelling, debility, fever, chills, sometimes terminating fatally, as many cases in dental and medical literature show, through pyæmia or septicæmia, after an intervening stage of phlegmon.

Köhler* observed in two years forty-four cases of periostitis, which in some had led to extensive necrotic destruction. The periostitis proceeded often from diseased roots and quite as often from extractions, which by no means seldom lead to a kind of gangrene of the mouth (gangræna acutissima), and occasionally to general sepsis. "Consequently this little operation must in the future be carried out more in accordance with the fundamental principles of antisepsis than has been the case in the past."

Necrosis is but a more advanced stage of osteomyelitis and periostitis. The bone, deprived of all sources of nutrition, dies (becomes necrotic), and is afterwards thrown off by the surrounding tissue in the form of a so-called sequestrum.

Whether the periostitis and necrosis result from a diseased condition of the teeth or of the gums (stomacace, noma), or accompany certain general diseases (syphilis, scrofula, the exanthemata), or follow upon the incorporation of certain mineral poisons (mercury, phosphorus, lead, arsenic), or, finally, result from traumatic injuries or impeded eruption of the wisdom-teeth, in many cases the sole agent, and in all an important one, in bringing about the disturbance is to be found in the bacteria of the human mouth.

10. *Dental Fistulæ.*

In this connection I refer in particular to those fistulæ of dental origin which open on the neck, shoulder, arm, or breast, thus giving rise to so-called "running sores," which of course defy all treatment until the true source is discovered.

Nicolai relates a case where the connection of a chronic fistula on the breast just above the nipple was discovered by the discharge, on the day following a visit to the dentist, smelling like the medicament used by the dentist in treating a badly diseased root. A solution of cochineal injected into the root also made its appearance at the opening of the fistula a few hours later.

11. *Septicæmia.*

Many cases may be found in medical dental literature in which a general infection of the blood causing the death of the patient in a few hours has resulted from the accumulation of pus about a diseased tooth or from operations in the mouth. Fracture of the mandibula not unfrequently leads to a general septic infection. Malgaigne saw death result from fracture four times in seventeen cases, Richet twice in ten. Unfortunately, we know absolutely nothing about the specific bacteria present in these different cases, and as far as I know no attempt has ever been made to cultivate them or even to examine the blood and various organs microscopically in any case of septicæmia of dental origin.

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* Charité Annalen. Jahrg. XIV and XV, 1888-89.

12. *Pyæmia.*

Cases of pyæmia resulting from diseased conditions of the mouth and teeth are of more frequent occurrence than those of septicæmia, and in some respects of greater interest, particularly to the practitioner of medicine.

Chronic pyæmia presents itself in the form of abscesses of varying intensity occurring in different parts of the body, healing spontaneously at one point, only to break out again at some other more or less remote. An abscess at the point of the finger or on the toe may originate in a diseased tooth as well as an abscess at the point of the root. The focus of infection maintained by the diseased tooth constantly gives up its virus to the blood or lymph by which it circulates through the system, and, under favorable conditions, establishes itself at any point, where, at the time, there may be a diminished vitality, or in other words, a locus minoris resistentiæ. In all cases of chronic pyæmia a thorough inspection of the oral cavity should be made by a dentist or by a physician whose education in regard to oral pathology has not been so entirely neglected as heretofore has usually been the case.

13. *Meningitis*, *Encephalitis*, *Abscess of the Brain*, *etc.*

It may at first thought not appear quite clear how an inflammation of the brain or its membranes, abscess of the brain, etc., may be brought about by carious teeth. A superficial examination of the relations of the teeth to the cavity of the skull will, however, show us that an inflammatory process incited by the teeth of the upper jaw may reach the brain cavity either through the maxillary sinus, nasal cavity, and cribriform plate of ethmoid bone (or directly through the nasal cavity and ethmoid), or through the pterygoid fossa and foramina at the base of the skull, or by way of the spheno-maxillary, inferior sphenoidal fissure, orbit, etc. Inflammatory processes in the lower jaw ascending the ramus usually obtain entrance to the skull cavity by way of the orbit, less frequently, it seems, through the pterygoid fossa. Septic meningitis may be produced by germs obtaining entrance to the blood through wounds or abscesses and lodging at some weak point on the brain, while the possibility has been suggested that the micrococcus of sputum septicæmia may enter the blood through the lungs without the intermediary stage of pneumonia. Finally inasmuch as croupous pneumonia is caused by a mouth-germ, so must the metastatic meningitis of pneumonia be looked upon as the work of a mouth-germ.

14. *Impeded Eruption of Wisdom Teeth.*

The chronic state of irritation upon the gums and periosteum resulting from impacted wisdom-teeth, and the consequent state of diminished resistance, make it possible for micro-organisms, which obtain entrance between the crown of the tooth and the overlapping gums (resisted as they so frequently are by the irritating action of small particles of food undergoing fermentation), to multiply in large numbers and, penetrating along the course of the distal root into the depths of the jaw, to bring about the series of disturbances, osteitis, osteomyelitis, periostitis, phlegmon, trismus, and in some cases necrosis or even septicæmia. It is one of the many cases where bacteria which may be present in the mouth without leading to any disastrous results as long as the soft tissues are in a perfectly healthy condition, never allow any opportunity presented by the diminished resistance of the tissue to escape their notice.

15. *Pyorrhœa Alveolaris.*

There are many reasons for believing that pyorrhœa alveolaris has an origin similar to that of the suppurative processes associated with the impeded eruption of the lower wisdom teeth. A predisposing cause which may be in part general and in part local sufficiently impairs the resistance to allow the pyogenic bacteria of the mouth to gain a footing. This view, which I have maintained for years, was supported by Galippe in a paper read before the Dental Section of the International Medical Congress, 1890. He found chiefly streptococci in all cases of pyorrhœa alveolaris recently examined.

The evil results of allowing this disease to gain the upper hand manifest themselves not only in the impairing or complete loss of the efficiency of the teeth as organs of mastication, but also, as has been expressed by Galippe, when a secretion of matter in the mouth becomes general patients may suffer from fever, loss of appetite, stiffness, severe disturbances of the alimentary canal, insomnia, snbictoritic discoloration of the skin, etc.

16. *Disturbances in the Alimentary Tract.*

The mouth, as has been sufficiently well established, furnishes one of the chief sources for the constant recruiting of the bacteria of the stomach and intestines. Not only this, but the constant swallowing of decomposing matter and of pus from an improperly cared for mouth may lead to the most serious disturbances, both acute and chronic. Particularly where a chemical or mechanical insufficiency of the stomach exists, the digestive process, and consequently the general health of the patient, is sure to suffer severely when the care of the mouth is neglected.

We have known patients under treatment for troubles of the digestive tract to most scrupulously sterilize all articles of diet and then pass them through a mouth seldom visited by a tooth-brush, thereby incorporating with them millions of bacteria. In all troubles of the digestive tract, too much care cannot be bestowed upon the antisepsis of the mouth.

17. *Diseases of the Lungs.*

a. Croupous Pneumonia.

The uniform results obtained by investigators on the subject of pneumonia for the last five years leave little room for doubt that the cause of this important disease is to be sought for in a species or group of micro-organisms which are constantly present in the sputum of persons suffering from pneumonia, and very frequently even in the saliva of quite healthy people. This micro-organism, or group of micro-organisms, will be discussed at length later on. At present I wish to emphasize only the fact that pneumonia owes its origin to a mouth bacterium.

Furthermore, there is much reason in the arguments of Meltzer,* who claims that it is impossible for micro-organisms from the air to obtain direct entrance into the alveoli of the lungs through the air-passages with their numerous crooks and turns ; that they first lodge in the mouth or pharynx, from which they may, by a strong inspiration, be carried with particles of mecus into the broncheoli, to be then finally driven into the alveoli through the pressure of the air in the broncheoli during the middle phase of the act of coughing.

The view is supported by the fact, as shown by the investigations of Hildebrandt,† that the trachea, bronchi, etc., of healthy animals contain no living germs. Hildebrandt, moreover, came to the conclusion, after a series of very careful experiments, that by far the greater part of the bacteria of the air lodge in the mouth, nose, or throat, and that under ordinary circumstances these cavities furnish an almost perfect filter for the air. Again, it is highly improbable that the number of germs inhaled at any one time would be sufficiently great to maintain themselves in the human lungs without having undergone at least a temporary stay in the mouth, which serves as their recruiting or breeding place.

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* Über die mechanischen Verhältnisse bei der Entstehung der Pneumonie. (*Med. Monatsschr.*, Feb., 1889.)

† Beitrge zur pathol. Anatomie u. Physiologie von Ziegler und Nauwerck. Bd. II, 1888, S. 143.

Furthermore, the micrococcus of pneumonia not only does not proliferate at the ordinary temperature of the air, but, what is of still greater importance, soon loses its virulence when cultivated out of the body even under the most favorable conditions, which is still another potent reason for the supposition that in pneumonia the mouth and not the air is the direct source of the infection.

b. Gangrene of the Lungs.

Bonome* examined seven cases of gangrene of the lungs, and found in all seven the pyogenic staphylococci,—Staphylococcus pyogenes aureus and albus. He concludes that the necrosis of the lung-tissue is due to these micro-organisms alone, whereas the putrefactive processes are brought about by an ordinary saprophytic bacteria which may obtain entrance to the necrosed parts. The former are frequent, the latter constant inhabitants of the oral cavity, and the probability that the invasion takes place from the mouth is at least very great.

Positive evidence in support of this supposition was furnished by Leyden and Jaffé, who found in putrid sputum micro-organisms which hitherto have never been met except in the oral cavity.

The relation of mouth-germs to actinomycosis of the lungs will receive consideration later on.

18. *Infiltration of the Surrounding Tissue and Chronic Swelling of the Lymphatic Glands in the Region of the Lower Jaw and Neck.*

The causal relation of a diseased condition of the teeth to this affection has been clearly enough established by Odenthal†, who found glandular swellings in ninety-nine per cent. of all children who suffered from badly decayed teeth, and only in forty-nine per cent. of those with sound teeth. We are not so much surprised at this result, inasmuch as every practitioner must have repeatedly observed marked swelling and soreness of the glands of the neck concomitant with pericementitis of the lower bicuspids and molars.

19. *The Infectious Anginæ (Tonsillitis, Amygdalitis Infectiosa, etc.)*

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* Giornaldellae R. Academia di Medicina, 1886, No. 7.

† Inaugural Dissertation. Bonn, 1887.

It is now commonly recognized that the tonsils may harbor various pathogenic bacteria in their lacunæ without any appreciable evil consequences, until, through some cause or other, which may be of a very trivial nature, their action manifests itself either in form of a local or general infection. Particularly tonsils which are chronically inflamed, hypertrophied, are dangerous accumulators of pathogenic germs, and for this reason Bouchard * recommends their destruction by ignipuncture, while von Hoffmann † obliterates the lacunæ by tearing with a blunt hook through the bridges connecting the neighboring lobes of the tonsils. He thereby not only destroys the recesses which so often contain masses of pus, bacteria, etc., in a state of putrefaction, but also produces a marked contraction of the hypertrophied gland. This operation is recommended as a prophylactic measure of great importance against diphtheria.

A. Fränkel ‡ gives an account of two cases of severe septic infection proceeding from the organs of the throat. In the first case the disease began with a diphtheritic affection of the tonsils, and resulted in a retropharyngeal phlegmon, pericarditis, and pleuritis. In the pericardium he found a litre of pus, in the right pleural cavity extensive purulent, and in the left, sero-fibrous exudations. Cyanosis and dyspnœa were present.

Heubner and Bahrdt reported similar cases in 1884.

In the second case before mentioned, there developed endocarditis ulcerosa, broncho-pneumonia, cloudy swelling of the kidney, infarction of the spleen. The tissues of both tonsils were infiltrated with sero-purulent matter, septic infection proceeding from the organs of the throat by means of staphylococci.

Fürbringer, in the discussion of Fränkel's cases calls attention to the many cases where one is obliged to write "unknown mykosis," and records (1) a case of sepsis following upon a swelling of one of the tonsils: (2) a case of sepsis resulting from carious teeth (on the right and left side, respectively, one carious lower tooth), first giving rise to inflammation of the subgingival connective tissue, periostitis, and phlegmon; (3) a case of endocarditis ulcerosa and embolic meningitis resulting from a suppurating tonsil.

Apolant records a case of pyæmia, and Leyden a ease of retropharyngeal abscess resulting from sore throat.

Numerous cases have been recently reported before the Société Médicale des Hôpitaux.

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* Thérapie, des maladies infectieuses, p. 256.

† *Theurapeutische Monatshefte*, October, 1889, p. 441.

‡ *Deutsche Med. Wochenschr.*, 1887, No. 15, p. 553.

Among others MM. Féréol and Rendu* report cases of phlegmon of the cellular tissue surrounding the larynx and œsophagus, followed by respiratory and cardiac troubles. Féréol † also reports a case of amygdalitis resulting fatally in five days through the supervention of a general infection. This case was characterized by a hiccough lasting through the whole sickness.

The authors just named demand that the most scrupulous attention be paid to troubles of the organs of the throat, even when they are of most trivial appearance.

Little is known as to the specific micro-organisms concerned in these cases. Bouchard ‡ found enormous numbers of small bacteria in a case of phlegmonous amygdalitis. Cornil || found streptococci in a case of abscess of the tonsils.

20. *Angina Ludovici*

presents itself as an inflammation of the cellular tissue beneath the lower jaw, giving rise to an exceedingly hard swelling, which may extend from the border of the lower jaw to the sternum. It may terminate fatally, either through œdema of the glottis, or, when suppuration takes place, through general sepsis. Under the name of Angina Ludovici, writes Tissier, § we understand an infectious septic process, characterised by an induration with a tendency to gangrene, always appearing under the same symptoms, *which serves as a primary lesion of the mouth, which serves as a point of entrance to the germs.*

Sufficient evidence has been accumulated ¶ to render it highly probable that this severe, though rare affection, is the result of the invasion of micro-organisms through slight wounds, ulcerations, or other breaks in the continuity of the mucous membrane, or by way of diseased teeth, or of the tonsils, or of the ducts of the sublingual and submaxillary glands.

21. *Diseases of the Maxillary Sinus*

are of such frequent occurrence that every practitioner must have seen one or more cases. It is not necessary to refer to the fact that they are in the vast majority of cases the result of the action of mouth-bacteria.

Complications of the troubles which require particular mention

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[*] Annales de Médicine, Mai 27, 1891.

[†] *Journal des Connaissances Médicales*, 1891.

[‡] Vid. David, Les Microbes de la Bouche, p. 170.

[||] Cornil et Babes, Les Bacteries.

[§] *Progrés médical*, 1886, p. 514.

[¶] Chantimesse et Vidal (v. David, Microbes de la Bouche, p. 173).

are diseases of the nasal cavity, chronic catarrh of the frontal sinuses with constant flow of offensive mucus, spreading of the affection to the orbit and hence to the brain, or through the cribriform plate of the ethmoid to the brain, resulting in abscess of the orbit, abscess of the brain, meningitis.

22. *Pneumococcus Abscesses.*

It has been well established that the so-called pneumococcus possesses invasive properties of the highest order, so that there is hardly any part or organ of the human body which may not fall a prey to its action.

Leaving out of account the croupous pneumonia and its sequels, such as pleuritis, pericarditis, œdema, emphysema, embolic meningitis, etc., we may mention here parotitis, multiple subcutaneous abscesses,* tonsillitis,† otitis media, abscesses of the mastoid process,‡ peritonitis and meningitis (independent of pneumonia), etc. In such cases the coccus is transported from the mouth to other parts of the body through the blood or lymphatics, or as is often the case in otitis, meningitis, etc , by a direct spreading of the affection from the mouth to the neighbouring cavities. The possibility has also been suggested of the pneumococcus obtaining entrance to the blood through the lungs and giving rise to a primary peritonitis, endocarditis, meningitis, etc., without the intervening stage of pneumonia.

23. *Disturbances resulting from the Absorption of Products of Putrefaction through the Mucous Membrane of the Mouth.*

In persons of uncleanly habits, who neglect the care of the mouth, and especially who allow rubber plates to remain in the oral cavity for weeks together, constantly covered with a thick coating of putrefying mucus and food, loss of appetite, nausea, vomiting, and chronic indigestion may result from the prolonged action of the products of decomposition upon the mucous membrane of the mouth and pharynx.

24. *Stomatitis Ulcerosa* (*S. Scorbuttea, S. Mercurialis*).

These are nothing more or less than the result of the invasion of pyogenic and saprophytic bacteria of the mouth upon a tissue which has already suffered a severe diminution in its powers of resistance through the general primary affection. There can be no doubt that the intense suppurative and putrefactive processes often appearing in advanced stages of these diseases are not the result of the action of the mercury or of the general condition known as scorbutus, these serving only to deprive the tissue of its normal power of resistance and so to prepare it for the invasion of the ever-present bacteria. This view, if I have not misinterpreted him, has already been expressed by Galippe.

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* Testi, *Riforma medica*, 1889, Nos. 281 and 282.

† Gabbi, *Lo Sperimentale*, 1889, fasc. 4.

‡ Zanfal, *Prager Med. Wochenschr.*, 1889, Nos. 6, 12, 15, and 36; Netter, Compt. rend. hebd. des séances de la soc. de biol., 1889, p. 305.

The same is to a certain extent true of stomatitis diptheritica, which seldom attacks the normal, healthy mucous membrane of the mouth, as well as of the stomatitis syphilitica, frequently met with in old cases of latent or "cured" syphilis.

25. *Actinomycosis.*

This disease is of so frequent occurrence and its connection with the mouth so apparent, that it requires only to be mentioned to carry with it an argument for a more commensurate estimation of the importance of careful attention to the hygiene of the mouth.

Of two hundred and three cases reported in German medical literature of the last five years, the point of entrance was found to be in the region of the mouth and throat one hundred and twenty times, not including the cases of actinomycosis of the intestines, where also the fungus most probably entered through the mouth. In nine cases the point of entrance was doubtful, and in the remaining seventy-four it was outside of the mouth. How often the infection took place directly from the air or through the food, and how often through germs which had established themselves in the mouth, cannot be determined from the reports.

Actinomycosis threads and glands have by various observers been repeatedly found in the saliva as well as in carious teeth, and in the lacunæ of the tonsils. Most frequently, carious teeth are brought into causal connection with the invasion, then slight wounds on the mucous membrane, colonization of the fungus in the tonsils, etc.

Imminger,* who examined over one hundred cases of actinomycosis bovis yearly, found the invasion to take place almost invariably from the tonsils.

26. *Noma,*

although a disease of comparatively rare occurrence,† excites particular interest on account of the fearful ravages which it produces and the rapidity with which it advances, so that in the space of three or four days the whole cheek, nose, eyelids, mucous membrane of the jaw and soft palate may be transformed into a necrosed, putrefying mass.

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* Adam's Thierärztliche Wochenschr., 1888, No. 18.

† V. Bruns (Die Chirurgische Pathologie und Therapie der Kau - und Geschmacks-Organe. 1859, Bd. I) collected four hundred and thirteen cases out of the English, French, German, and Dutch literature.

Whereas the majority of older writers on the subject of noma look upon this disease either as a trophoneurosis, or as a necrosis similar in its origin to the decubital ulcers of the throat, the majority of recent investigators are inclined to attribute the chief rôle to certain micro-organisms. Froriep * appears to have been the first to call in the aid of a living agency in the form of appearances resembling yeast fungi, which he found in noma. After him, Strueli † describes what he calls noma pilz, while Ranke ‡ found masses of bacteria, almost all cocci and Cornil et Babes || found short chains of micrococci, either free or in zoöglœa.

Schimmelbosch, § to whom I am indebted for some of the above notes found apparently a pure culture of bacilli on the border of the sound tissue, which he succeeded in cultivating upon artificial media.

Small pieces of necrotic tissue implanted under the skin of the neck of two rabbits caused abscesses, one as large as a cherry, the other three times as large, but no necrosis developed,—a result similar to that obtained by Ranke. Inoculation of rabbits with pure cultures caused œdematous swellings on the conjunctiva, in one case keratitis, in another panophthalmitis. Mice and doves proved immune; two hens showed circumscript necrosis which healed inside of three weeks.

Likewise Grawitz ¶ found bacilli in nearly pure culture. The appearance was described by Loeffler ** as similar to that seen in diphtheria of calves.

27. *Pharyngomycosis* (*Mycosis Tonsillaris Benigna*).

An infection caused by a proliferation of saprophytic bacteria in the lacunæ of the tonsils.

28. *Stomatomycosis*

caused by the colonization of sarcina on the mucous membrane of the cheeks, and

29. *Thrush*,

the well-known disease caused by the invasion of a yeast-fungus,

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* Chirugische Rupfertafeln, 1884.

† Ueber Noma und deren Pilze. Inaug. Dissert., Göttingen, 1872.

‡ *Jahrbuch f. Kinderheilkunde*, 1880.

|| Les Bacteries, second ed., p. 394.

§ *Deutsche Med. Wochenschr.*, 1889, No. 26.

¶ Ibid., 1890, No. 15.

** Ibid.

Saccharomyces albicans. These are all troubles of undoubted parasitic nature, while as to

(30) *Stomacace*, (31) *Aphthæ*, (32) *Herpes Labilais*,

opinions are still divided.

33. *Inflammation and Suppuration*

of the salivary glands, in particular of the *parotitd*, must also be mentioned as troubles which in many cases owe their origin to mouth-bacteria which find their way through the ducts to the body of the gland.

Of diseases of a general nature with a localization in the human mouth, we notice briefly

(34) *Diphtheria*,

which may occur primarily in the mouth chiefly after wounds of the mucous membrane (extractions, etc.), or secondarily, the disease beginning in the throat and spreading into the mouth.

The unanimous results of nearly all investigators of the last two or three years have established the Klebs-Loeffler bacillus almost beyond all doubt as the cause, or one of the chief causes, of diphtheria. It is not at all clear, however, in just what manner the bacillus obtains a footing in the mouth or throat. Whether a chance germ from the air lodging upon the mucous membrane of the throat is sufficient to call forth an attack of diptheria, or whether such germ only under certain predisposing conditions is able to proliferate in sufficient numbers to excite the disease, or whether, finally, the human mouth and throat in particular may harbor the diphtheritic bacilli under normal conditions until the proper moment arises for them to assert their specific action, these are questions awaiting solution.

The fact that an attack of diphtheria may be provoked by slight wounds in the mouth, or by the presence of diseased teeth, and the fact that the extirpation of the tonsils has proved to be one of the most successful prophylactic measures against diphtheria, seem to point to the conclusion that the last-mentioned condition is at all events highly probable.

35. *Tuberculosis.*

Many cases are on record in which primary tuberculosis of the mouth has made its first appearance around diseased teeth or roots of teeth, or following extractions and other operations in the mouth.

Whether or not the bacillus of tuberculosis can exist in the mouths of non-tubercular persons for any length of time is again uncertain. Examinations of the normal saliva have given only negative results, but too much importance should not be attached to this fact, since it is sometimes necessary to examine the saliva even of consumptives repeatedly before finding tubercle-bacilli. A case has been reported where fifty-nine examinations resulted negatively, while the sixtieth disclosed the long-sought-for bacilli. At all events, there is no danger of erring when we assert that the care of the mouth is to be considered as an important factor in the prophylaxis of tuberculosis also.

36. *Syphilis.*

The question of syphilitic infection through dental operations (extraction, filling), through unclean rubber-dam, instruments, drinking-glasses, through kisses, transplantation of teeth, bites, etc., has been so frequently discussed in dental periodicals, and must be so familiar, that a simple statistical inquiry into the question will suffice to show the importance of exceeding great care on the part of the dentist to prevent transmitting the disease to innocent patients. Cases in which syphilis has been communicated by tooth-wounds, bites, slight wounds with instruments wet with saliva, as well as cases where the operator has been infected by syphilitic patients, must be counted by the hundreds.

37. *Infections following Operations in the Mouth.*

In recent years the demand for the adoption by dental surgeons of the same antiseptic measures observed by the general surgeon has constantly become more and more imperative. Attention has been repeatedly called to the fact that bloody operations in the mouth, such as tooth-extractions, performed, as too many of them are, without the slightest regard to the principle of asepsis, often lead to infections of serious nature, which might have been easily avoided; not only that, but carelessness in regard to cleansing the instruments after every operation frequently results in the communication of disease from one individual to another.

38. *Infections resulting from Wounds with Dental Instruments.*

Numerous cases have recently been brought to light in which slight wounds upon the hand inflicted by instruments used in operations upon the teeth, also scratches of the fingers on sharp roots have resulted in infections of a most serious nature.

To the same category belong infections received through kisses, blows upon the teeth, bites, etc.

Stomatitis Epidemica.

Foot and Mouth Disease in Man.

Cases have been reported from time to time in the medical journals, in which foot and mouth disease has been communicated to man from domestic animals, particularly by contact with cows, through milk, butter, etc.

These cases are of a mild nature, exhibiting themselves chiefly in the form of vesicles on the mucous membrane of the mouth, more or less swelling of the gums, etc., but seldom manifesting severe general symptoms.

Under the above title, however, I wish to refer to an affection of a more serious nature, which, as will be shown, in all probability has the same origin as the foot and mouth disease in cattle, but which, being communicated directly from man to man, becomes more virulent than when communicated from cow to man, the relation presumably being the same as that between variola and varioloid.

The epidemic referred to occurred in one of the suburbs of Berlin, a district having a population of nine thousand persons, of which over six thousand have suffered from the disease in the last eighteen months.

Through the kindness of Dr. Siegel, I have been able to make a few observations on the disease, which he himself will soon describe in full in the *Deutsche Med. Wochenschrift.*

The disease first presents itself in the form of dizziness, faintness, and not unfrequently repeated swoons. The face of the patient presents a serio-comic expression, similar to the risus sardonicus of tetanus ; skin pale, eyes watering, neck stiff, partial trismus, partial paralysis of the tongue, the patients whom I saw being unable to protrude the tip of the tongue more than one-fourth to one-half inch beyond the teeth. One, two, or three days later vesicles appear on the lips, tongue, and in the nostrils ; these break open, giving rise to ulcerating surfaces ; their contents are serous or often bloody. The gums swell, and in neglected cases putrefaction sets in, the teeth become loose and fall out, the fetor of the breath is intense.

In severe cases bleeding from the mouth, stomach, intestines, bloody fæces, bloody urine, albuminuria, intense swelling of liver, clouding of the lens, and blindness are frequent accompaniments or results of the disease. In some thirty cases the disease ended fatally, and in many more it assumed a chronic form, nearly or completely incapacitating the patients for all kinds of labor.

Dr. Siegel has found in the organs (liver, kidneys, spleen, etc.) of all cases (eight in number) where he made the autopsy a micro-organism which he has succeeded in cultivating, and which, injected subcutaneously, causes in goats, calves, and pigs the symptoms characteristic of foot and mouth disease ; sections showing again the same micro-organism as found in the tissues of the human subject.

The disease is supposed to have spread chiefly through the beer saloons, where little attention is paid to cleansing the glasses between drinks. Bad hygienic conditions in most of the houses also favor the spreading of the epidemic.—*Dental Cosmos.*

[*Here follow the carefully collected and admirably condensed tables of the actual cases upon which Dr. Miller has based his conclusions.*]

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

To the Editor of the " DENTAL RECORD."

DEAR SIR,—In last month's "RECORD" I notice a printer's error in your report of the demonstrations at the Annual Meeting of the British Dental Association. You credit me with setting up an " easy upper denture," and whilst admitting that it may be " easy " for the patient, I should like to point out that it was intended to show two methods of mounting flat teeth in continuous gum, either of which, enables one to avoid any risk of fracture in the fixing.

In the next number of the " RECORD " with your permission, I hope to publish a full description, illustrated by wood-cuts, of the various steps in the production of cases in continuous gum-work, which I advocate.

Yours, etc.,
HARRY ROSE.

OBITUARY.

SAMUEL CARTWRIGHT, F.R C.S.

With extreme regret we have to record the death of Mr. Samuel Cartwright, who passed to his rest on August 23rd, at the age of 76. The son of a man celebrated in the dental profession, Mr. Cartwright, himself, followed in his footsteps and established for himself a reputation in the profession of his choice, while he earned the respect and affection of all those who had the privilege of being associated with him. He studied at the London Hospital, taking his M.R.C.S. in 1838 and his F.R.C.S. in 1859. He commenced his professional work as a dentist in Sackville Street, whence he removed to Old Burlington Street to undertake the practice which his father's failing health obliged him to give up. In those days the profession was not what it is now, and many and severe were the struggles through which it had to go before its final establishment by the Dentist's Acts, and formation of the Odontological Society, and, subsequently, of the British Dental Association. Mr. Cartwright's probity of character and high professional attainments made him a frequent referee upon professional matters. When the London Dental Hospital was initiated Mr. Cartwright was one of its first surgeons, while he undertook for the school associated with it to lecture upon Dental Surgery and Pathology; he was also, for many years, treasurer to the Hospital. Mr. Cartwright was appointed Dental Surgeon also to the King's College Hospital, and, subsequently, Examiner at the Dental Board of the Royal College of Surgeons, giving much satisfaction in each post. Later in life, owing to great pressure of work, he retired from these positions. Mr. Cartwright was distinguished by the honor and uprightness of his character and the value of his friendship was greatly appreciated by those who shared it. We must add that Mr. Cartwright was the first to occupy the specially-instituted Chair of Professor of Dental Surgery at King's College, and upon two occasions received the Blue Riband of the Dental Profession, election to the Presidential Chair of the Odontological Society, again following in the steps of his father who was the first to fill the honoured post. The social side of Mr. Cartwright's character was conspicuous by his love for music, having been one of the original members of the "Round Catch and Cannon Club," as well as his no mean attainments with the pencil and brush. After a blameless and distinguished life Mr. Cartwright has left us with the legacy of a well-beloved memory. Many who are now busy practitioners will remember how, in the old "Soho days," Mr. Cartwright's kindly bearing endeared him to the students, for whom he undertook the presidency of their Society, as well as being the chairman at the first dinner given by the Present and Past Students of the London Dental Hospital.

THE DENTAL RECORD, LONDON: OCT. 1, 1891.

METHODS OF ENGLISH AND AMERICAN DENTISTS.

DR. BOARDMAN of Boston (U.S.A.) undertakes in the columns of the *International Dental Journal* to compare these, and although we in England recognising but one art "Dentistry" should prefer to speak of the methods of Dentistry as practised in America and England, yet it is good to see ourselves as others see us, and so we welcome Dr. Boardman and are glad to hear what he has to say. Our critic does not speak from hearsay, he took charge of the practice of an American practising in the West of England while the principal was away, and so learnt the methods of English dentists and their surroundings. The only inkling Dr. Boardman got of the peculiarities of the western aborigines of England before he pitched his camp among them, was that he was to deal as gently with them as possible, for "they dread pain in England more than Satan." The practice was a 'high-class one,' consisting of county families, clergy and retired service men and their families. The first impression received was that English men and women, were sparing of their tooth brush, setting little or no value upon their natural teeth, "it is puzzling" the Dr. says "to understand how people, cultured, refined and wealthy, can tolerate so much uncleanliness in their oral cavity." The next impression was less uncomplimentary to our national feelings, for Dr. Boardman puts it on record that he found his patients calm, ready to bear pain if needful, and to submit to even prolonged operations; they were also less inquisitive, or, as he puts it, less well informed about dentistry, leaving the matter in the hands of the operator, and assuming as he knew his work he would do his best. He says very few gum sections are used, plain single teeth being preferable, and in most instances there is no gum about the ten anterior teeth. Gold plates, superior and inferior, are usually held in place by a pair of U-shaped gold springs, their free ends being attached on either side by pivots to upper and lower. Upon the subject of extraction Dr. Boardman says patients were usually willing enough to lose their teeth, but usually took gas ; ether and chloroform never being used, "for the laws preclude all dentists from administering these agents." Do they ? One certainly has much to learn. Fees, we are informed, range much the same here as over the water, only as "an English dentist charges for every detail," he gets more than his American confrére. Dr. Boardman's peroration deserves serious consideration from English dentists, for if it be true, we may hope for more gentlemen over here from among his compatriots, who must eventually exterminate the aboriginal dentist from the land of his birth. He says, "Another generation will have passed before the English patient will become educated to the requirements of the American standard of excellence." This we may be permitted to say cannot apply to the question of education of the dentist, for unless calumny is rife the American curriculum is not in all cases quite up to the mark of English standards of excellence and so must be immeasurably below that of our transatlantic brethren. But we must let Dr. Boardman speak for himself. He adds, "The English prefer an American dentist to any other, and their own countrymen, even, not excepted." And so it is in vain we meet in association gatherings, that we hold learned disquisitions in our societies, that we educate our youth through seven weary years, a gentleman who hails from the land of the puritan fathers has only to come, and he sees and conquers. 'These be sad thoughts, my masters,' but may there not be a fallacy somewhere ? Has this critic kindly, gently and even generous though he be, gone quite far enough through the length and breadth of the land to be able to tell his friends of the Harvard Odontological Society, "all the truth, the whole truth and nothing but the truth." This is an old old story of the wonders which befell the wandering sightseer of another race, he saw very much it is true, but he never learned to know how much there was which he had never heard of, and simply because he had not gone to the right place to get his knowledge.

Dr. Boardman is no captious critic, his honesty shows itself in his paper and if he is a little proud of his fellow countrymen it is weakness Englishmen will readily condone for we too are proud of them, for are they not our sons and the sons of our daughters? But through no fault of his, the writer has suffered from that dangerous thing "a little knowledge," the narrowness of his horizon has made him overlook mountains beyond, which if he ever visits our shores again, which, doubtless he will do if he believes in his own prognostications he will find a lot to learn about English ways and English dentists, which it will be most salutary for him to learn. We set up for no council of perfection and deplore the rotten state of our Denmark as regards so-called Dental Institutes where freshly fledged American graduates are sweated after the manner of the East-end Jew sweaters, our cheapjacks and our incapables, but we cannot be blind to the fact that on the Continent and in America similar evils exist and shame a fine profession. Those who have grown old in the service of Dentistry in England have seen and heard of many strange things happening in all parts of the world, but as age creeps on we grow more tolerant of the shortcomings of others and less sure of our own excellence, and learn to take wide views and to digest little knowledge a very long while before we give it to the world for what it is worth.

GOSSIP.

The course of Lectures on Operative Dental Surgery at the National Dental Hospital intended for practitioners as well as advanced students, will begin on Monday, October 12th, at 6·30 p.m., by a lecture on Amalgam and Amalgam Equipments by Mr. Amos Kirby.

The special subjects to be discussed by Mr. Geo. Cunningham, in this year's lectures will include—

(1.) The Morphology of the Dental Arches as effecting methods of treatment.
(2.) The Practical Application of Bacteriological Research in the Treatment of the Mouth and Teeth.
(3.) Immediate Root Filling.
(4.) Restoration of Extremely Decayed Teeth by Matrix fillings with Amalgam.
(5.) Open Ferrule Crowns.

Each lecture occupies about an hour and a half, every Monday till Christmas. The fee for the course is £2 12s. 6d.

GOSSIP—*continued.*

THE number of students graduated from the various Dental Colleges in the United States for 1891, are as follows :—

Ohio College of Dental Surgery	75
Pennsylvania College of Dental Surgery	94
Philadelphia Dental College	145
Dental Department, Southern Medical College	38
Dental Department, University of Maryland	64
New York College of Dentistry	86
Missouri Dental College	26
Indiana Dental College	40
Dental Department, University of Iowa	58
Mehany Dental Department, Central Tennessee College	1
Department Dentistry, Vanderbilt University	43
Kansas City Dental College	43
German-American Dental College (Chicago)	11
Dental Department, Columbian University	2
Dental Department, Tennessee Medical College	7
Western Dental College of Kansas City	9
Baltimore College of Dental Surgery	76
Chicago College of Dental Surgery	94
Royal College of Dental Surgeons of Ontario	30
Dental Department, University of Pennsylvania	83
North-Western College of Dental Surgery, Chicago, Ill.	3
United States Dental College, Chicago, Ill,	11
American College of Dental Surgery, Chicago, Ill.	49
College of Dentistry of the University of Denver, Col.	5
University College, Chicago, Ill.	4
College of Dentistry of the University of Minnesota	7
College of Dentistry of the University of Michigan	29
Harvard University—Dental Department	15
Boston Dental College	31
Louisville College of Dentistry	26
	1105

Journalistic Memorabilia.

IN THE REPORT OF A SESSION OF THE AMERICAN ACADEMY OF DENTAL SCIENCE.

Dr. Fillebrown cited *(International Dental Journal)* three interesting cases :—

Case I.—Miss ——, aged thirty-five. Odontocele in left superior cuspid region. The patient was brought to me by her father, a physician, who had extracted her upper teeth preparatory to a set of artificial teeth. Tumefaction of the left side remained, and in regard to these conditions he desired my advice. Upon examination with a steel probe I felt what was evidently enamel deeply embedded in the tissues. An operation revealed a fully-developed cuspid tooth lying almost horizontally in the jaw, the crown pointing forward. The removal of the tooth was followed by immediate recovery, and the mouth was soon in perfect condition for a plate. Such a case must come to very many of us, and the only peculiarity about it was that it showed the value of special judgment as perfected by special practice. The gentleman who brought the patient was a man of large medical knowledge and of considerable surgical ability, and yet he combated my position very strongly, and would not admit even to the very last that there was a tooth in the mouth. He was sure that they had all been removed. I remember another case which illustrates a tumour of the crackling egg-shell quality as described by Dr. Stone. I never quite understood the cause of it. The patient was a young man, and the only abnormal appearance about his mouth was the fact that the six upper teeth, involving the region from one cuspid to another, were a good deal crowded. There was considerable tumefaction there, and upon pressure over the tumour a crackling sound could be heard and a crackling sensation felt. The tumour would yield to pressure, and upon removal of the finger a depression remained for a time, but the original shape was regained. The patient's teeth were so crowded and irregular that he desired them out, and as this seemed best in his condition, I removed them. There was no discharge from the tumour and nothing unusual occurred. The tumour got well in a short time after the removal of the teeth. Whether the crowded teeth could have caused that condition, I do not know. A probe passed up through the socket of one of the extracted central incisors showed quite a large cavity, which remained open for a good while, but finally was completely cured without further treatment. As soon as advisable the patient had artificial teeth, and as far as I know has had no further treatment.

Case II.—Mrs. ——, aged forty-five. Epulis arising from the pericementum of the left inferior second bicuspid mesial surface. Cured without operation. This tumour had existed for some time, and when my advice was asked it filled the space between the bicuspids and protruded considerably into the mouth. Applications at various times had failed to destroy it or much restrict its growth. The patient was very nervous, and would not consent to anæsthesia or to any operation without it. I concluded to try constant pressure with styptics. I selected the persulphate of iron, and taking a pellet of cotton of suitable size to fill the space between the teeth, I coated it with the powder and packed it down upon the tumour. This was repeated at intervals of one or two days for about two weeks, the cotton being packed directly upon the tumour. The bulk of the growth disappeared upon the second application. Then, by following carefully to the starting-point of the tumour, I succeeded in effecting a complete cure in the two weeks, and without any operation involving the cutting of soft tissues or removal of bone.

Case III.—Mr. ——, aged thirty-five. Tumour of upper jaw, with suppuration. In February, 1889, this patient came to the Harvard Dental Hospital, accompanied by his physician. He showed himself to be intellectually bright and capable. His stature was diminutive, he being less than four and one-half feet tall. The upper frontal portion of his skull was well developed, but the superciliary ridge was very receding, not projecting at all beyond his eyelids, and the whole surface of the skull was very irregular. The calcareous elements were quite largely in excess in his bones, in consequence of which his limbs had been broken some six times by slight causes. His muscular system was very well developed. His upper jaw was very small, much smaller in proportion than the under, the latter being quite prominent. This patient showed an extremely long, soft palate, the uvula and opening to the posterior nares being quite as low as the normal position of the glottis. On the whole, his mouth exhibited a unique appearance. His upper jaw presented some very large and long teeth, much swelling of the soft tissues, with copious suppuration. The teeth were loose, and the cuspids and bicuspids seemed to move together. His case had been diagnosed as necrosis, but as there was entire absence of the characteristic discharge, and to my touch the teeth moved independently of the jaws, I came to the conclusion that the condition was abscess caused by the teeth, and that removal of them would effect a cure. The evident ankylosis of the teeth, the enlargement immediately behind and connected with the bicuspid, and the excessive size of the apex of the roots as shown by the probe left no doubt in my mind that we had to deal with an odontocele. I was quite unable to convince the patient's medical adviser of the correctness of my diagnosis before the operation, hence I was obliged to await the result. There was no question as to the necessity or propriety of operating for him, as, whatever the condition, operation was the only way to obtain relief. The patient was anæsthetized with nitrous oxide. Ether was immediately added and ether narcosis induced. An incision was made along the necks of the teeth extending as far as the boundaries of the tumours, and the teeth seized with forceps and the several bodies removed. These I show in this connection. The odontoma of the left side is an irregular mass, one and one-fourth inches long by three-fourths of an inch in thickness, consisting of a cuspid, first bicuspid, and an aborted second bicuspid and molar. The crown of the cuspid and first bicuspid are normal in form and development. The root of the cuspid is enormously developed, it being seven-eighths of an inch long, the portion near the apex one-half of an inch in diameter, and much curved backward. The root of the first bicuspid is also very large, and the surfaces of both are very irregular and rough from hypercementosis. The second bicuspid and molar are entirely rudimentary, a section showing the irregular formation of secondary dentine, with no pulp cavity remaining and hardly a trace of a formerly-existing one. The cuspid was separated from the rest of the tumour, and with no sign of pericementum. The other three teeth were fused into a single mass, and were nearly covered with what seems to be serumal calculus. The tumour from the left side consists of three teeth,—cuspid, bicuspid, and molar,—and is very similar to the other. The cuspid and bicuspid crowns are normally developed, the cuspid root very long and large, and the root of the bicuspid also very large, and both very irregular. The molar is a little more regular in form than the one on the left, with quite a large pulp chamber with a branch corresponding to a root canal, the whole forming one connected mass and covered with calculus. Attached to the right bicuspid is a portion of the alveolar wall united with it by complete ankylosis. There is also a small portion of bone attached to the left cuspid. There is no sign of necrosis on either of the tumours. The patient made a good recovery. In March, 1891, the same patient returned to the hospital with a chronic abscess discharging under his chin on a line with the bicuspid teeth, and nearly in the median plane, which had failed to yield to continued treatment. The location of the fistula had misled all who had observed it, consequently he had suffered from it for a considerable time, and he now came to see if his teeth had anything to do with it. He supposed that all his teeth had been removed. Upon probing I found roots present which were evidently causing the abscessed condition. He was again anæsthetized with nitrous oxide. I attempted to remove the roots under the gas, but this was not readily acccomplished, the brief narcosis not being sufficient. Ether was administered, and the roots removed. The left root proved to be a bicuspid with very excessive hypercementosis and with calcareous deposits; the right an unusually large cuspid root. The specimens you see with the others. In the two years since the first operation, his upper jaw has become absorbed until his mouth is about the size of that of a child five or six years old. It would measure less than one inch from one molar ridge to another. It was a surprise to every observer. The patient has not reported since the last operation, but I feel there is no doubt of his complete recovery.

The *Dental Office Laboratory* gives the following useful mems.:—

PLATINIZED SILVER FOR DENTAL PLATES.

Silver four and platina one part, makes a very good alloy for dental plates, it works easier in swaging and can be soldered with eighteen carat gold solder. This alloy is used quite extensively in England, we are told. Dr. Haskell recommends its use by dental students, and certainly it is much preferable to brass or copper for them; its cost is only about one-fourth that of twenty carat gold plate; rubber can be used on it for attachment the same as on gold plate. The alloy does not tarnish in the mouth, which fact is readily recognized when we know that the sulphuretted hydrogen set free in the processs of vulcanizing does not effect the plate sufficiently to preclude its use in this way. It is as rigid as eighteen carat gold plate, and is especially adapted for partial plates. We hope to see it adopted more extensively in the colleges and in practice; certainly it is worth an impartial trial.—*Archives.*

The Conservation Treatment of the Dental Pulp.

In a paper read before the American Dental Society of Europe, Dr. A. C. Hughenschmidt, of Paris, summarizes his treatment as follows: –First, wash out cavity with a 1·200 sol. of bichloride of mercury. The capping is powd. iodoform and salol mixed with lanolin and covered with mica, the rest of the cavity being filled with oxy-phosphate or oxy-chloride of zinc. In cases where pulp is fully exposed and unprotected by decalcified dentine it should not be capped at once. In summing up he says: First, in healthy, freshly exposed pulps salvation is not only possible but probable; second, pulps long exposed, but not suppurating, can be saved in a large majority of cases; third, in suppurating cases the pulp can only be saved after proper antiseptic care, and not in all cases; fourth, tumours of the pulp require extirpation and the removal of the entire pulp.

Why Carbolic Acid Should be Discarded by Dentists.

1. Because of its deleterious action on the pulp; oil of cloves is preferable to carbolic acid.

2. As a root canal dressing it is, because of its great solubility in water, not to be depended upon.

3. It is not a chemical disinfectant when brought in contact with sulphuretted hydrogen.

4. When it comes in contact with dentine it is absolutely useless.

5. Its beneficial action is only temporary.

6. Unless combined with oils it is valueless.

7. As an agent for injection it is without value if there are fine roots that hold fragments of pulp.

8. It does not possess embalming properties.

Dr. A. W. Harlan.

Death from Cocaine Injection.

The *Journal fur Zahnheilkunde* reports a case of death in a dentist's chair from injection of cocaine into the gum, given for the purpose of inducing anæsthesia for the extraction of roots of teeth. The patient was a woman, twenty-nine years old, apparently perfectly healthy, but very nervous. The extraction was painless, and nothing abnormal was noted. The operator withdrew from the patient's chair to get some water for the patient to rinse her mouth with, and on his return found her motionless. Physicians were summoned and artificial respiration was practised, but without success. The autopsy disclosed the fact that three injections had been given, which served for the extraction of three roots. The quantity of cocaine in each injection was two centigrams, or one-third of a grain. The *Journal*, after commenting on the dangers of cocaine, refers to nine cases of fatal poisoning reported by Dufournier in the *Archives generales de Medicine*. One of these cases, however, is doubtful, as the patient took a mixture of chloral and cocaine. The *Medical and Surgical Reporter*, in quoting the above, says that the uncertainty of the action of cocaine is shown in a case reported is the *British Medical Journal*, where one-seventh of a grain injected into the eyelid produced very serious poisoning.

Cement for Glass Labels.

"New subscriber," Warren, Me.—Beeswax is an excellent material for attaching glass labels either to bottles or to wood surfaces. Melt the wax, warm the label, and also the surface to which it is to be applied, when practicable, coat the label with the wax, place on the surface, and press the label gently into place. As the wax begins to cool, renew the pressure with sufficient force to expel any great excess of wax. When quite cold, this excess is to be scraped off and the surface can then be made perfectly clean by rubbing with a rag moistened with turpentine. White wax may be used instead of yellow ; while scarcely as tenacious it is quite enough so to answer and presents a better appearance when the back of the label happens to be seen. A small proportion of rosin is sometimes added, but the cement is better without it, unless it is to be exposed to a tropical temperature.

Hot Water in a Hurry.

Very often a physician needs hot water in the middle of the night when there are no conveniences at the house of his patients to obtain it. The *Dixie Doctor* suggests thet if there should be a kerosene lamp handy with a chimney having a corrugated top, this want can be easily met. Place an ordinary tin cup with a sufficient amount of water upon the top of the chimney. The corrugations let out the heated air so that the lamp will not smoke and the water will quickly become hot.

INSANITY FOLLOWING EXTRACTION OF NINETEEN TEETH.

Mrs. Ella Targett, a woman of large frame was taken to the Bellevue Hospital for the Insane. The husband said he believed his wife's insanity had been brought on by a sitting at the dentist's at which she had nineteen teeth drawn under laughing gas.

" For the past six months my wife has been weak and nervous. She had been in the country for a time, and upon her return complained that she had suffered dreadfully from neuralgia of the face. She thought that she would be better if she had her teeth pulled and begged me to give her money for this purpose. I did so, and she started out with her aunt a week ago last Thursday. She left the house early in the afternoon, but did not return until about 9 o'clock at night. She seemed utterly broken down when she reached the house and was in a fever. For an hour I could not get a word from her as to the experience she had undergone. The aunt told me, however, that my wife lost two quarts of blood, and finally my wife herself said that, although she had taken gas, she could feel each tooth as it was pulled. The aunt declared that she had first asked the dentist if it would be perfectly safe to administer the anæsthetic, and he answered her that it would. A physician who had attended my wife before was called in. He said she ought not to have taken gas. She grew steadily worse, and the insanity under which she now suffers has rapidly developed. She has never been out of her mind before. We have been married eleven years."

Dr. Stuart Douglas, under whose care the patient is at Bellevue said yesterday that her condition is extremely serious. "She screeches in horror at the blood and bloody visions pictured by her disordered mind," he said " and writhes and twists with furious strength in the hands of those who seek to restrain her. The suicidal mania is strongly developed."

When asked if the shock from tooth pulling might precipitate insanity in a person with some leaning that way, Dr. Douglas said it was possible. He would hazard no opinion in Mrs. Targett's case, however, but said that he knew of nothing for which the dentist was reprehensible.—*N. Y. Correspondence Philadelphia Times*, *July 19*.

The DENTAL RECORD.

Vol. XI. NOVEMBER 2nd, 1891. No. 11.

Original Communications.

CONTINUOUS GUM WORK.

By Harry Rose, L.D.S., Eng.,

Lecturer on Dental Mechanics, National Dental College.

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A desire having been expressed by a number of my professional brethren, for a more detailed account of the method I employ for making continuous gum work, than I was able to give when demonstrating at the Annual Meeting of the B.D.A. in August last, I have compiled the following account with the hope that it may simplify this hitherto difficult work.

The possession of a mineral compound and gum enamel, the first, practically unshrinkable and requiring but one firing, the second, having a perfect freedom from cracks, if ordinary care is observed in the firing process, enables one, if the directions set forth are followed, to produce gum facings and blocks with the greatest facility, and with an entire absence of the risk usually attending the making of this kind of work.

Preparation of the Plaster Model.

First adapt a thin wax plate to model, to represent the thickness of rubber that will form the lining for the block or facing. Fasten the wax plate to model, and then obtain a zinc die and lead counter.

The Platinum Plate.

This should vary in thickness according to the requirements of the case, thus, if a very narrow plate is required, No. 4 will not be too thick, but as a rule, No. 3 will be found sufficiently rigid.

For partial cases where an interval exists between the artificial teeth, owing to the presence of a natural tooth on the model, the plate crossing the interval should be strengthened by having a piece of platinum wire fitted, and soldered to it with fine gold.

If the platinum plate is intended to be permanently attached to the block, it will be necessary after swaging, and while it yet remains in the lead counter, to punch a series of holes in it ; the burrs resulting from the punch will be on the external surface of the plate, and help to constitute the necessary retaining points.

The interposition of a piece of rag or brown paper between the platinum plate and lead counter, will afford an easy means for its withdrawal from the same.

If the removal of the platinum plate from the block is contemplated, after the case has been fired, then it must be left perfectly smooth.

In this latter case, the platinum simply acts as a medium for retaining the shape of the block or facing, and is stripped from it, on the completion of the case.

Mounting the Teeth on the Plate to the Bite.

In a case in which they are to be removed, (see description later) it is as well to allow a slight interval to exist between them, to make provision for any shrinkage that may occur in the mineral compound.

The possibility of this may be safely ignored, when it is intended to fire the piece with the teeth in situ.

The teeth themselves need not rest upon the plate unless in extremely shallow cases, and the mineral over the alveolar ridge should be of as even a thickness as possible.

The reason of flaws occurring in a block, is often entirely due to the unequal distribution of the mineral compound.

There are several places in a block or facing where a flaw would be likely to develop, viz : first, between the front teeth ; second, between the canine and first bicuspid ; and third, over the canine eminences.

To guard against the second weak spot, which is shewn unrectified in Fig. 7, the first bicuspids should be ground out on the lingual aspect of the root, so that there will not be any sudden break in the thickness of mineral behind those teeth and the canines, and care must be taken also, that the mineral is quite as thick over an eminence as it is in the depressions. The contour of the gum, of course, is regulated by the amount of wax used in mounting the teeth, and should be finished in an artistic manner, prior to commencing the plaster sections.

PREPARING THE PLASTER SECTIONS.

After the teeth are mounted in wax, cuts or grooves are made in the front and sides of the plaster model, (Fig. 1) and are meant to serve as guides to the portions of plaster which have to be moulded to the front gum and teeth.

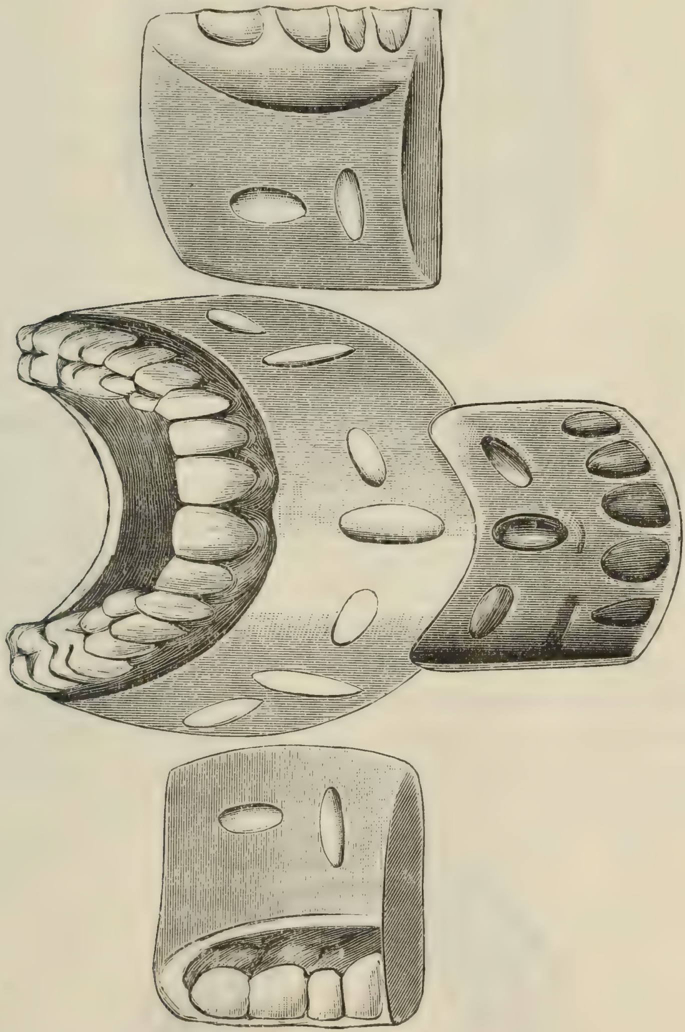

Fig. 1.

There should be three of these sections in front, one embracing the six front teeth, and the other two acting as supports for the bicuspids and molars on each side, (Fig. 2) and the sections should be bevelled in such a manner as will admit of their parting readily.

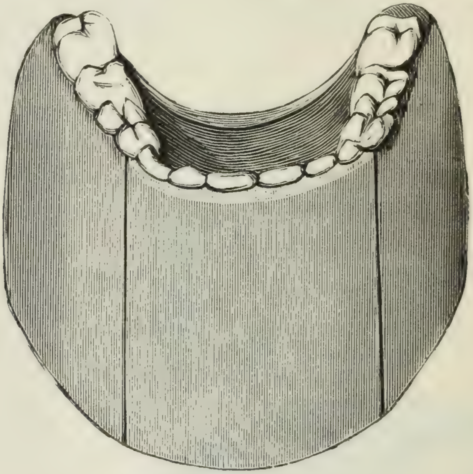

Fig. 2.

To make the sections, a little soap should be painted over the front gum and model; then mix up some plaster fairly thick, and apply it so as to cover a little more of the model and teeth than is required, and when set, trim up to the exact size. Then soap the section and model and mould the other two pieces, after which trim them up so that they come level with, but do not overlap the points of the teeth.

The crowns of the teeth should also be covered by a fourth plaster section extending over and embracing the other three sections, and should be cut away in such a manner from the lingual surface that it will not interfere with the packing of the case. (Fig. 3).

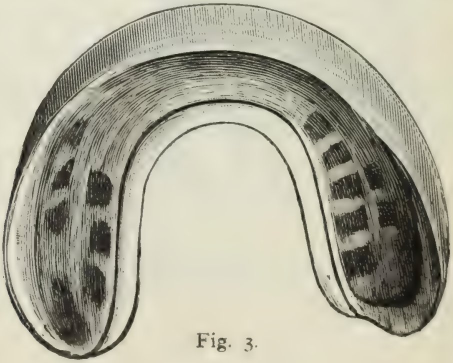

Fig. 3.

The four sections of the mould are now separated, the wax matrix removed and the teeth cleaned.

It is not necessary to dry the plaster sections before the next process.

Lining Sections with Tissue Paper.

Cut out pieces of thin tissue paper, approximating somewhat to the size of the internal surface of the plaster sections.

Take each section separately, coat it with a little vaseline, place the tissue paper, moistened in distilled water, in position and with a camel hair pencil, press it until it is adapted to the surface of the section.

Treat the alveolar ridge and palate of plaster model in the same manner, unless the latter is covered by a platinum plate.

The tissue paper should not come quite up to the points of the teeth.

The sections are now adjusted to the plaster model, and held in position by an india-rubber band, the interposition of the thin tissue paper making no material difference to their proper adjustment.

The sections now form a mould of the block or facing, and the lining of tissue paper if not abraded or torn, will effectually prevent the adhesion of the mineral compound to the surface of the mould, while the vaseline coating the plaster will prevent a too rapid absorption of the moisture from the mineral during the process of packing or filling in.

Mixing and Packing in the Mineral Compound.

After the plaster sections have been lined with moistened tissue paper, and the teeth and plate rendered perfectly clean, the plate may be made warm and painted over with a thin film of gum enamel, which will dry on it at once, this easy flowing material, attaches itself to the plate on firing and forms a medium for the adhesion of the mineral.

If the removal of the platinum plate is contemplated after the completion of the block, then this must not be done.

The plate having been placed in position on the model, and the three front plaster sections adjusted, the packing of the mineral may be proceeded with.

Mix it with distilled water into a consistency sufficiently firm to push into the mould without flowing about.

The process will be facilitated if sufficient material is packed in to fill up the mould to the necks of the teeth, as it will then form a foundation, as it were, for the teeth to rest upon.

Commence by inserting four back teeth on one side, then place the crown plaster section in position and press the teeth quite home, introducing more mineral beneath and around to retain them.

Remove the crown section again, proceed with the other teeth in a similar manner, and lastly insert any fastenings that may be necessary.

After the packing is completed, the mould should be placed in front of a fire or any warm place in order to drive off moisture.

When the mineral has become sufficiently hard, the crown plaster section is first removed, then the molar sections, and lastly the front section, when it will be found, if the tissue paper has not been perforated, that they will part from the block quite easily.

At this stage, additions of mineral may be added to the block if not quite perfect, and any trimming up done that may be found necessary.

The block should now be removed from the model and still more thoroughly dried, after which it may be placed in a convenient fire-clay cup or tray nearly covered with powdered silex, and gradually introduced into the furnace for the first firing.

The most simple method for making fastenings for vulcanite, is to insert platinum pins into the mineral during the process of moulding and after the insertion of the teeth. (Fig. 4).

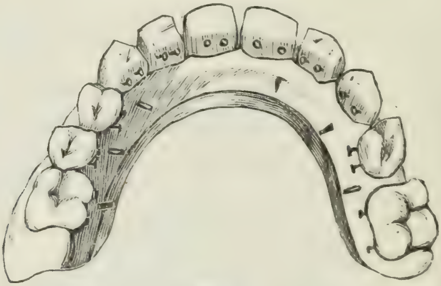

Fig. 4.

Another method is to drill some fair sized holes through the platinum plate previous to mounting the teeth, smoothing off any burr that may be formed. Then after the packing of the mineral is completed, and before firing, holes must be carefully drilled into the mineral block in continuation of those on the under surface of the platinum plate.

The holes so drilled should be made well undercut, and to preserve their shape during the firing of the piece should be filled with moistened silex.

The Method for Mounting Flat Teeth.

After the case has been set up to the bite, and the plaster sections prepared as previously described, the mould is opened, and the teeth and platinum plate cleaned.

Platinum backs are now fitted to the teeth, each back having an extension (Fig. 5) bent at right angles, prolonged so as to protrude through the back part of block and form a fastening to hold vulcanite.

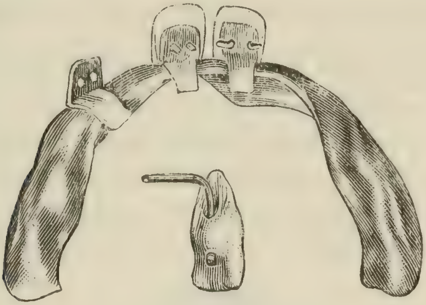

Fig. 5.

If the articulation is very close it may be necessary to solder the teeth to the plate, and this may be done in a way that will not subject them to any additional firing. Take each platinum back and bend the extension to conform to the surface of the platinum plate, and when all are ready for adjustment, warm the plate and melt a spot of hard wax on it opposite the back of each tooth ; next place the back on each tooth without bending the pins, warm the platinum extension, and quickly place the tooth in position in the mould, where the back will become fixed by the wax on the plate. Manipulate each tooth in the same manner, then separate the plaster sections of the mould, and remove each tooth, leaving the platinum backs adherent to the plate as shown at the left of Fig. 5. Invest the plate and backs in brickdust and plaster, and solder with fine or coin gold. The plate must now be thoroughly cleaned, after which the teeth may be readjusted, and the pins bent at right angles close to the back. (Right-hand tooth in Fig. 5).

The soldering of the teeth to the backs may be easily effected, at the same time as the block is fired, if found necessary.

MOUNTING OF TUBE TEETH.

The single tooth shown at the bottom of Fig. 5 has been designed by myself for this particular work, having a hole to receive a platinum pin, and a hollow base to give strength and substance over the alveolar ridge; the platinum pin that is inserted in the hole in the tooth should be of sufficient length to come flush with the crown and bent beneath the root at right angles to pass through the mineral and form a hold for the vulcanite. It also illustrates the method for mounting ordinary tube teeth, the platinum pin being placed in position when the teeth are being inserted in the vulcanite.

TO MAKE A GUM FACING WITH REMOVABLE TEETH.

In order to be able to remove the teeth from the mineral, it is necessary to lubricate them with a little vaseline prior to their insertion in the mould, when thus treated, the moulded block being quite hard, and the sections of plaster separated, no difficulty will be found in detaching them from the facing, (Fig. 6 & 7) which may

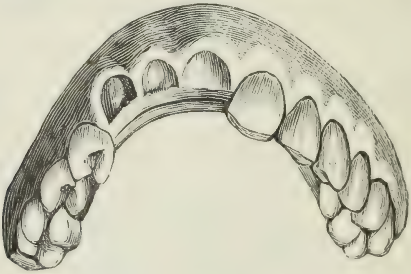

Fig. 6.

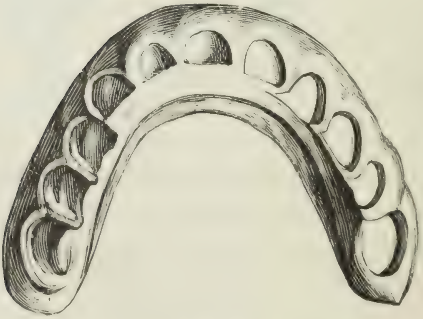

Fig. 7.

then be trimmed up and fired, taking care not to overfuse it. It is also well to take the precaution of filling the sockets in the facing with powdered silex to assist in preserving their shape during the process of firing. The teeth in these cases are of course dependent for their attachment upon the vulcanite, and any repairs are effected as simply as in the ordinary cases where that material is used. The facing itself must have pins or loops fixed in it when being moulded, to ensure its attachment to the vulcanite (Fig. 4).

NOTES ON FIRING.

If the case has not been contaminated with oil or vaseline when moulding, it may be placed in a small fireclay receptacle and covered with powdered silex, then warmed up and gradually inserted into the furnace.

If on the contrary oil or vaseline has been used, as in the facing, with detachable teeth, it must not be quite buried, as the smoke generated by the burning of the oil might discolor the block. For the same reason it is desirable to leave the front of the muffle out until the mineral is nearly fused. Do not leave the furnace while the block is being fired, as a sudden rise in temperature might in the course of five minutes run it out of shape.

All stoking must be done prior to the insertion of the case in the muffle, and the presence of smoke or dust carefully avoided.

DESCRIPTION OF FURNACE.

A few words about the furnace I use for firing continuous gum work may not be out of place here. It stands 27-ins. high, and is 15-ins. square, so that after allowing 2½-ins. for thickness of fire-bricks, it gives an inside diameter of 10-ins., and a depth of 15-ins. The outer case is formed of sheet iron, which may be obtained at any good ironmonger's upon supplying him with a diagram and measurements. The case is rivetted together at the back, and the inside is lined with Stourbridge fire bricks, coming up to and level with the top of the case. The top of the furnace is made of a single casting, with a round hole cut out of the centre for a lid to fit on to and close in, and at the back part of iron casting is a raised rim to carry the flue. The whole furnace presents a neat and compact appearance.

By referring to Fig. 8, it will be seen that a portion of the iron case in front is removed to permit of a good draught, at the same time sufficient of the casing is left at the sides of the aperture to cover and support the brick lining. The upper part of this opening is bridged across by two stout pieces of iron (one of which is visible), to act as supports, the lower one for the bars and the upper to retain the bricks, above the bars lining the front part of furnace. The pieces of iron should be $2\frac{1}{2}$-ins. wide. Corresponding pieces should also be inserted at the back part of interior of furnace, and the fire-bricks should be cut away so that the bricks and bars present an even surface.

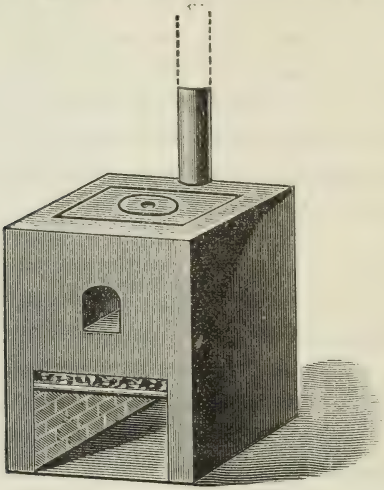

Fig. 8.

The firebricks are fitted into their places and joined together with soft fireclay ; this, when heated becomes fused to the bricks, making a clean and level surface.

The flue of the furnace is made of ordinary iron piping, supplied for that purpose, and the whole can be adjusted to the space usually occupied by an ordinary grate.

By referring to Fig. 8, it will be seen that an opening has been cut in the iron jacket to allow of the introduction of a muffle, and the brick lining is arranged accordingly. The muffle should be supported along its whole length by firebricks, or a firelump, resting on the three centre bars, which should not be removed. The fuel used is ordinary gas coke, broken into small pieces, so as to slip readily down between the furnace wall and side of muffle.

ON SOME MINOR SURGICAL OPERATIONS PERFORMED IN OR ABOUT THE MOUTH.*

By F. Breese, L.D.S., Eng.

Mr. President and Gentlemen,

The only definition of minor surgical operations which I have been able to find, says that they " comprise the lesser ones, or those of every day occurrence."

Rigidly adhered to, such a definition would exclude those which I propose to notice in my remarks to-night, for it is precisely because they cannot be said to be of every day occurrence—even in the largest practice—that they have been chosen for description.

But, inasmuch as they undoubtedly come within the range of what we all understand by " minor " operations, a preferable definition might be one where they were spoken of as involving in themselves no danger to life, and which cause but slight disturbance to the general health and avocations of the patient.

In the treatment of some conditions met with in the mouth, surgical operations of small magnitude, but not unimportant in their results to patients, have occasionally to be performed by the dentist, and to these my observations will be mainly confined.

One could wish that a communication to a Society like this should be characterised by originality of ideas and expression, but if that be unattainable, either from the nature of the subject or the unfitness of the writer, then it but remains to make what one has to say as useful as possible ; and if the end be the suggestion of a treatment in any slight degree more beneficial to the patient than might in some instances be adopted, I can but hope that the absence of the more brilliant quality will be excused for the sake of the lesser one.

With so much of introduction, let us pass to the consideration of our subject ; and first a few words on the opening of alveolar abscesses. It is now a generally accepted principle of surgery that an abscess, in whatever part of the body it occurs, should be opened and drained of its contents as soon as it can be safely done, and moreover, that the drainage should be from its most dependent part, or at the point of greatest fluctuation. Now let us suppose that we meet with, and wish to treat, our first case of alveolar abscess deeply situated, for example, in the lower jaw ; that the offending tooth is one which we shall attempt to save by treatment ; and that the diagnosis—usually a simple matter—has been made out ; and then dismiss this part of the case from our minds. Meanwhile, we want not only to act up to our principles of surgery, and to relieve our patients, but to prevent the abscess from opening externally which it threatens to do. How are we to accomplish this ? If we turn to some of our text-books for information, we shall be probably told that the " abscess must be opened " or the " pus evacuated." Excellent advice as far as it goes. Other books more explicit will tell us that we must do it by making an incision down to the pus inside the mouth and between the cheek and jaw. Of the two forms of lancet commonly used for the purpose, the sickle-shaped and the round-edged, the latter is probably the better one to select ; and the incision made should be a free one. To prevent a wound of the facial artery, which accident has been known to happen, the incision should be made parallel to the jaw in its length, so that a cut made in the front of the mouth and one made in the molar region would be nearly at right angle to each other in the same plane, though both conforming to the rule ; the knife must be kept as close to the bone as possible ; its edge must be turned towards the bone and not away from it ; and the cut should be made directly downwards. By attending to these points, no serious hæmorrhage will be likely to follow. In getting our drainage, it is to be noted that we have acted directly contrary to the surgical principle enunciated above, as to draining an abscess from its most dependent point, for we have deliberately adopted an up-hill method of doing so. The reason is not far to seek. The carrying out of the principle—a thoroughly sound one in its general tendency—in this particular case, would have necessitated an external incision ; and anyone who has seen a patient, especially of the feminine sex, marked by the depressed scar of a healed sinus, will appreciate the reason why the formation of such is prevented by treating the abscess in the way indicated. Palatal abscesses should be opened from behind forwards ; the bone hugged as before ; and the cut made parallel to the course of the posterior palatine artery. It is generally desirable to take some means to prevent the sides of the incision from uniting before the cure be complete, and this may be done by inserting between them with conveying forceps, or packing in with a blunt probe, a piece of carbolised lint. One long strip should be used ; it should be passed right to the floor of the abscess ; and the end cut off short as it projects from the incision. No attempt need be made to pack it tightly; and a day is quite long enough to leave it in without changing The subject of depressed cicatrices has been touched upon, and we may at this point ask with propriety:—can anything be done in the way of improving the personal appearance of a patient unfortunately disfigured by these? That the answer is in the affirmative, appears clear from a reference to Mr. Reeves' work on Orthopœdic Surgery. Writing on this subject, the author first describes a plan of treatment by which all adhesions are first subcutaneously divided, the depressed skin being then everted so that cicatrix remains raised. Two hare-lip pins are then passed at right angles through the base of the cicatrix and retained in position for three days. Mr. Reeves expressed himself as dissatisfied with cases operated on in this way, because "of the subsequent greater or less reappearance of the depression in consequence of absorption or contraction of the new material," and he then proceeds to describe a method adopted by himself, and which, presumably, is more satisfactory. It consists, he says, "in passing a silver wire subcutaneously around the adhesions, making the ends emerge at the same puncture and tightly drawing and twisting the ends together. The adhesions are thus more or less cut through at the time of the operation, and by giving an extra twist occasionally, the remainder of them will give way. The ends are then cut off close to the puncture and buried in it, and the wire left permanently in situ. The new material thrown out as a result of the operation becomes organized around the wire, and the two together prevent the cicatrix relapsing."

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*A paper read before the Students' Society of the Dental Hospital of London.

These two little operations have been described, although somewhat out of the scope of my paper, because if any considerable improvement in the appearance can really be effected, it is very desirable that the fact should be more generally known than perhaps it is. I would, therefore, particularly ask gentlemen who have had any opportunities of noting the results obtained after these or other similar operations, to give us the benefit of their experience in the discussion to follow.

If gentlemen will now kindly imagine the abscess, which has occupied us in its different phases so far, to be located in the antrum we shall pass by an easy transition from the operations which have been described to the next task we have in hand, and this is to consider the best way of evacuating the pus which has unhappily formed in our patient's antrum. There are at least three different methods of accomplishing this. The antrum may be reached through the vacated socket of a tooth, a perforation may be made through the canine fossa, or the natural opening into the nose may be enlarged. The last way has so many disadvantages that it is only necessary in referring to it, to say that it is now generally abandoned, so that where a selection has to be made it will lie between the first two. If the cause of the suppuration be due to a diseased root, as it probably nearly always is, then the choice of operations is determined for us, for it will only be necessary to enlarge the socket to obtain a good drainage; but where—and no doubt the cases are rare—the teeth are apparently all sound, it is not quite so easy a matter to decide which course to pursue, but, on the contrary, demands some consideration before making a decision. Now of two things, one. We shall have to extract a sound tooth, and proceed as before by enlarging the socket of one of the roots, or we shall have to make our puncture through the canine fossa. If the former plan be adopted, a more dependent drainage will undoubtedly be obtained; but, and the "but" is a large one, at the sacrifice of one of the superior molars. This last is so serious a matter that the alternative plan seems a far preferable one to choose. Mr. Christopher Heath—always a great authority on such subjects—shows a decided partiality for the latter method; but as his grounds for doing so are not the same as the reason just given, it may perhaps be allowable to quote his own words. He says: "After considerable experience of both methods, I prefer the puncture above the alveolus, except where a tooth obviously requires extraction; because I find the aperture is less liable to close up than when made through the alveolus, and because food is less likely to find its way into the antrum." It must be admitted that the reasons given, though doubtless weighty ones from the surgeon's point of view, lose some of their force when looked at from the dentist's, for the entrance of food and the closure of the perforation may both be prevented, by the fitting over the aperture of a little appliance, which in its construction makes no great tax upon the mechanical skill of the maker. However, in the case we have imagined, the method to adopt appears plainly to be through the canine fossa. In those cases—also rare—where the teeth are all lost, the perforation may be either done in the same way or from below. Having determined the conditions which would lead us to adopt one or other of these two modes of operating, let us now pass to their actual performance. When the extraction of a tooth is followed by a flow of pus, the perforation of the antrum is already made for us, and subsequent steps simply consist in enlarging the socket till it is at least $\frac{1}{6}$th of an inch in diameter. This is done by means of one of the various forms of antrum-perforator, a trocar, or even as was recommended by Sir W. Fergusson, an ordinary carpenter's gimlet, used in the socket with a driving and screwing movement. Where no communication already exists, the instrument may be used in a similar way to make one. The direction of the force to be applied would vary somewhat according to the site of the root through the alveolus, of which the perforation is to be made. If the tooth extracted be a molar it is better to choose the socket of one of the buccal roots—as any attempt to perforate through the socket of a palatine root, as is recommended by Professor Garretson, would probably result in the antrum being missed altogether, and a communication being established with the nasal cavity. The instrument used must at intervals be withdrawn, and a probe passed to see if the antrum be reached. It is not always possible to tell when this latter event has occurred ; on the other hand, it sometimes happens, especially if much force has to be used, that the instrument enters so suddenly that there is a danger of it passing right up through the extent of the cavity, and wounding the orbital plate. To prevent the possibility of such an accident, instruments have been devised provided with moveable collars, which latter should, before beginning the operation, be fixed at such a point that if the instrument should slip, it cannot go far. Its too sudden entrance may also be guarded against by using the fingers themselves as a stop ; but it matters not how the danger be overcome, so long as it be not overlooked.

The perforation through the canine fossa is usually done with a small trocar. It should be made about the region of the second bicuspid, and at a point quite above the extremity of the tooth, in direction it should be chiefly inwards, but also somewhat backwards, and upwards. In carrying out this there is again a danger to avoid which Mr. Heath has pointed out. The height of the palate must be observed before commencing proceedings in order to judge what amount of upward direction to give the puncture, otherwise the floor of the antrum may be injured.

Where all the teeth are missing, if the perforation be done from below and through the thickness of the alveolus, it must not be forgotten that the bone will probably be extremely dense, and it is recommended in these cases to make the opening with a "strong, sharp, spear-headed drill in conjunction with the dental engine" in the first instance, and afterwards enlarge with the trocar.

Our patient's antrum may be left to look after itself now for a time while we pass to the consideration of our next case. The dentist will sometimes be consulted for the treatment of solid growths occurring in the mouth, and such a case now claims our attention. On examining the mouth there is to be seen a small tumour springing from between two of the teeth, and separating them slightly from each other. It is of a lobulated appearance, is hard or only slightly elastic to the touch, is but in a trifling degree more vascular than the surrounding tissue, and has none of the attributes looked for in a malignant growth. On enquiry it may be learnt that it has been there for some time—at least many months, possibly a year or two—and has only lately become troublesome, because of its liability to get bitten on at times. Looking at all the facts, no difficulty will be felt in diagnosing the growth as one of simple epulis. It is to be regretted that the term "epulis" has been so loosely employed up to a very recent period, that it has been used to describe almost any kind of tumour of the jaw, from an epithelioma of the gum, to a small polypus of the same tissue. Now, however, it is generally restricted to a tumour having the characteristics just described, which is of slow growth, innocent in nature, and in structure differs but very little from the gum around.

More time has purposely been spent over the diagnosis of this tumour than has been given to the same point in our other cases, because a mistake might easily be made, and with more serious results.

In the treatment of this, as in any solid growth, our object is twofold. The tumour has not only to be removed, but its recurrence if possible prevented. A rule may be laid down which is beyond criticism, that no 'tinkering' should be indulged in, and remembering that a recurrence of our tumour if it take place it may quite possibly be in a sarcomatous or, though rarely, epitheliomatous form, we see what a grave responsibility might be incurred by any want of thoroughness in our treatment of it. Many and various means of getting rid of these growths have been practised by different operators. Electrolysis, pressure, caustics, the ligature have all had their advocates. The desire to avoid hæmorrhage is probably at the bottom of the employment of any one of them, in preference to the more simple use of the knife ; but the tumour we are dealing with is not of so vascular a nature that we need anticipate any serious bleeding from it. Moreover, as the portion of the alveolus beneath the growth has to be removed, a resort to steel instruments sooner or later must happen. Therefore, not only on the score of thoroughness, but on the principal of not making two bites at a cherry, no attempt is going to be made to press, to burn, or tie away this tumour, and reserve the second part of the treatment for another occasion ; but the method advocated will be its excision to its seat of attachment, and then the removal of as much of the basal alveolus as may be necessary. The manner of doing so is simple : The tumour may first be isolated by a nearly circular incision made round its pedicle. The growth and all the tissues included in our incision must then be raised from the bone. The part of the alveolar border and its periosteum thus exposed must then be destroyed and for this purpose nothing better could be used than sharp enamel chisels, while for reaching the more inaccessible portions of the septa, which it is well to remove also, the use of fissure and other bars revolving in the dental engine, will no doubt occur to all. If this part of the operation be done thoroughly, the teeth on either side of the growth may be saved, if it be desirable to save them ; but in cases where the growth is found to spring from the periodontal membrane of the tooth, the latter must be sacrificed. There can scarcely be any complication of this little operation, except it be that it may be followed by some amount of hæmorrhage, and on this subject something will be said presently. The removal of large broad-based epulides generally involves a bone section, and as such cases are treated by the surgeon, they need not detain us here.

We may now pass to what has been found to be the most interesting subject of all so far dealt with, and that is the treatment of cysts. Of the two varieties of cyst found in the mouth and having any relation to the teeth, it is intended to speak only of those known as periosteal cysts. The name is an objectionable one, but it has been given because the cyst is formed beneath the periosteum, or more correctly the peri-odontal membrane of the teeth. These cysts may be of almost any size ; generally arise in connection with pulpless teeth or roots ; should not be difficult to diagnose, and are best treated on certain distinct lines. In the first place the tooth at fault should be extracted, and the extractor will have the satisfaction of knowing that this time at least he has followed the advice so frequently given in our works on Surgery "to remove the cause." The extraction may or may not be followed at once by the escape of the fluid contents of the cyst; but whether or no it is not all. Further measures consist in making an incision into the cyst from the outside, and then cutting out a section or window of the cyst wall. If the bone be much expanded this can easily be done with a pair of short, blunt pointed scissors; if not, something stronger, *e.g.*, cutting forceps might be used, and perhaps a neater way might be found by the use of the trephining bur. The important point about this part of the operation is to make the piece removed large enough. The interior of the cyst wall has next to be dealt with, the object being its destruction. The opening or window already made may be utilized by introducing through it a pair of forceps with serrated edges, as *e.g.*, artery forceps, and with these attempt to seize and remove what is called the lining membrane of the cyst. If this be not done then the structure may be destroyed by wiping it round with fuming nitric acid, or other strong caustic; care, of course, being taken in the application of such powerful agents. Later treatment consists in keeping the cavity sweet by means of syringing with antiseptics, and it may also be packed with carbolised lint in the same way, and for a similar reason as that given in dealing with our case of abscess. The packing also acts as an aid to granulation. The *rationale* of all the steps of our treatment may not be obvious to all, and it may very properly be asked, "Why are you so anxious to destroy the lining of your cyst?" The answer always given is "because the lining consists of epithelium, and until this is destroyed granulation, and consequently obliteration of the cavity, will not take place." Now let us ask ourselves some questions:—Are we sure that this epithelial lining really exists? In Tomes' classical works we are told that the morbid process resulting in the formation of these cysts, is probably identical with that resulting in alveolar abscess, but is less acute. If this hypothesis of their origin be the correct one, should we expect to find—and if we do, on what grounds can we explain the occurrence of—an epithelial lining to the cavity? Again, if there it is, would it not be an easy matter to demonstrate under the microscope? Yet, Mr. Eve in his lecture on "Cystic Tumours of the Jaws," states that he has examined a number of these cysts, and found, not epithelium, but a layer of granulation cells on their inner surfaces. It may be—as this was written some eight years ago—that later researches, with which I am not acquainted, may have cleared the matter up ; but if they have not, and there be really no evidence of the existence of this epithelium, then it is high time we ceased from talking of destroying it ; and personally, if told later that in this particular I have advocated treatment somewhat empirical in nature, I shall not be able to clear myself of the charge. Let us return to the subject of extraction of the offending tooth. Speaking generally, this is to be urged upon, but, at the same time, cases may arise where the sex of the patient and the position of the tooth renders it desirable to save the latter if it be possible. At least it is possible to try by the excision of part only of the root, as some of us must have seen demonstrated at this hospital in the following way:—A small vertical incision down to the bone is made over the extremity of the root of the affected tooth ; a plug of cotton wool dipped in the mastic is placed and fixed in the cut thus made. If the patient be left with this in for a few days, on his or her return, the removal of the plug of wool will find the edges of the cut gaping apart, and thus a better exposure of the part to be operated upon obtained, and in addition the operator will not be bothered with the hæmorrhage from the cut. The next proceeding is to chip away the bone covering the root, when it will most likely be discovered that the extremity of the latter, necrosed or partly absorbed, projects into the cyst cavity. By the excision of this part of the root with fine-cutting pliers, and smoothing it off with burs, by filling the root, and by otherwise treating our cyst on the lines mentioned, there may be a chance of saving the tooth.

It seems appropriate to choose as our last subject, that of hæmorrhage in the mouth, and indeed the paper would hardly be complete without some reference being made to it, but it may at once be said that the great demand already made on the patience of members, prevents any attempt to deal exhaustively with it being made.

We are under this disadvantage in our treatment of hæmorrhage of the mouth, that many of the methods of arresting it practised in other parts of the body, cannot be employed so directly here. This arises from the relatively greater arterial supply, the more or less inaccessible positions of the vessels, their free anastomosis, and also the greater difficulty in dealing with such in a comparatively confined space like the mouth. Hence we find in surgical practice a frequent resort to the actual cautery as a means of overcoming oral bleeding. The operation described to-night will probably not have been followed by any abnormal flow of blood, and the little we have had could be treated by much simpler means to begin with. Thus iced water held in the mouth is usually the first thing tried. Not succeeding with this, we might try mixing an astringent, such as alum, with the water. In a surface such as that left after the removal of an epilus, pressure applied digitally might be employed, and that failing, styptics might be used in conjunction with it in this way :—A piece of lint dipped in an alcoholic solution of tannin should be placed over the raw surface, a dry pad of the same material over that, and firm uniform pressure be kept up for some time over all. Failure need not be anticipated in this particular case, but if the bleeding were still uncontrolled the cautery might then be requisitioned. For ordinary cases this would be sufficient, but if not, later treatment would be to deal with the artery supplying the wounded surface. If this were the facial, no difficulty would be encountered ; but the inferior dental in its bony canal is not so easily got at. In this latter connection, Mr. Tomes has suggested the advisability of drilling a hole with the engine into the inferior dental canal—of course between the bleeding point and the carotid trunk—and then plugging the hole thus made with a wooden peg. The last resort need only to be mentioned ; it is to tie the common carotid artery. Such a step must be rarely necessary, and in the case of a patient of the hæmorrhagic diathesis increasing, as it must, the wounded surfaces, of doubtful benefit.

Hæmorrhage from the socket of a tooth, which may be briefly touched upon, is treated largely, but not entirely on local lines. Local measures consist in applying a well-fitting plug to the socket, with or without styptics. In this, as perhaps in most things, the best results are obtained by careful attention to details. Out of the many methods there are of treating this form of bleeding but one will be here described, and that is the way I have invariably adopted in my own experience. Small plugs of cotton wool of different sizes are rolled up tightly, and half of them are dipped in a solution of tannin, or impregnated with the dry powder of tannic acid. The socket is then cleared of any partly-formed clot, and the cavity syringed with hot water. Then momentarily controlling the bleeding, if it be possible, by firm pressure with a pad of wool, the plugs are rapidly passed to the floor of the socket and packed in alternately, that is to say, first a plug of stypticised wool is placed in position, then a dry one, and so on until the cavity be full. The use of tannin is clean and invariably effectual. A point not to be forgotten is to count the plugs, otherwise, when the time comes for removing them, it may not be possible to know that all have been withdrawn, without—what should be unnecessary—probing, and stirring up of the cavity with the risk of re-starting the hæmorrhage. The extraction of teeth with abscess cavities at their roots, if one may say so from a small experience, seem particularly liable to be followed by an unusual amount of hæmorrhage.

The difficulty of getting a plug to remain in is much enhanced in those cases where much force has had to be used in the extraction, and as a consequence the gum is somewhat lacerated and pushed away from the bone, and even perhaps the external plate of the alveolus broken away. To cope with these, pressure has to be resorted to. This may be done by compresses of various materials, such as lint, or gutta-percha being bitten on firmly by the opposing teeth, if such be present; and then, as it is said to be not safe to trust to "the patient's volition," the jaws must be bandaged together. It seems preferable, however, to take a little more trouble and make a vulcanite plate to cap the whole socket and adjacent surfaces. This would be more comfortable for the patient, and would probably answer better in exerting a more uniform and immovable pressure, and could be easily constructed in the course of a few hours. There are certain other measures, not local, it is well to advise the patient on. He should avoid the recumbent position, keep quiet and in the cool air, and should go without stimulating food and liquors for the time being. That this advice is necessary, a case in point will show. The patient came back twenty-four hours after an extraction with the news that the socket was still bleeding freely; when asked how she had spent the intervening time, and why she hadn't returned sooner, she stated that, acting on her landlady's advice, she had been sitting by the fire all day, and had kept herself up—as she called it —on brandy-and-water. One should never speak ill of a legitimate practitioner, but words concerning that landlady's treatment of hæmorrhage could only be those of condemnation.

Gentlemen,—Our paper draws to a conclusion; the writer cannot congratulate himself on having said very much that is new to you, but at least he hopes his cases have been treated on sound principles. He is almost ashamed to have occupied the time of members for so long on subjects in which so many here must be richer in actual experience than he can lay any claim to be. He hopes that those members will see to it that anyone who may have come here to-night in the hope of deriving some benefit shall not go away disappointed. With this hope, which though hackneyed is none the less sincere, and with his warmest thanks for your attention, he may best bring these observations to an end.

THE MISUSE OF THE TERMS "DISTAL" AND "MESIAL."

By J. Sim Wallace, B.Sc., M.B.C.M.

The term "distal" in dentistry seems to me not only misapplied but given a meaning almost exactly opposed to that which is given in both human and comparative anatomy. The proper meaning of the word "distal" being remote from the most fixed place of attachment. The distal end of the lower jaw is therefore at its symphysis, so that if the term were to be applied with any pretensions to accuracy, it would mean that surface nearest to the symphysis; but, according to dental nomenclature it is the opposite surface or edge which is called distal.

The term in comparative anatomy has a definite meaning, therefore its present abuse in dentistry should be discontinued.

Likewise the term "mesial," as I believe has already been pointed out, is incorrect, as the true mesial surface of a molar is the lingual or palatal surface, which is the surface nearest the middle line of the body.

The application of such terms is at variance with the scientific spirit which should pervade the use of terms in dentistry as elsewhere.

Accordingly I would suggest that both of these terms should be wholly cast aside in their present application to teeth. Such terms as "symphysial" and "condylar" surfaces might be applied. The symphysial surface or edge would, of course, be that surface towards the symphysis; the condylar surface, that towards the condyle as we pass round the alveolar margin.

IS DENTISTRY A DANGEROUS PROFESSION? A REPLY.

By —— L.D.S.

Under the above heading Dr. Dudley W. Buxton discusses very ably, and very kindly, some of the incidents in the daily routine life of the dentist which he thinks have an adverse re-action upon his health and comfort.

He takes as his example, the man who full of work, is allowing it to absorb his whole being, and gradually kill him, or at all events make his life burdensome by reason of his success. But there is perhaps, here and there, a case of insomnia, of neurasthenia, or nervous irritability, which arises from anxiety and care—the anxiety of not knowing where your next patient is to come from ; how you are to pay your rent and taxes ; how you are to provide for your wife and increasing family—a family perhaps not increasing in number but in expensiveness, and especially so since the demand for a higher dental education causes one to scan the tables of Hospital and lecture fees with grave consideration. The Dental Act will, we hope, in time work miracles for the next generation. but it does not do much to protect us from the advertising and cheap practitioners who infest our towns. We who have our L.D.S. diploma, and belong to the British Dental Association, must at any rate keep ourselves respectable, live in good houses, abhor all that which should be despised as unprofessional, while we sit and moan that our practices are being filched away, and our incomes growing less. I have been frequently told so by some of the older practitioners at our B.D.A. meetings, and I believe it to be perfectly true.

A few years ago, a traveller for a highly respectable dental supply house told me he had been requested by the firm to call upon the chemists in the town and suburbs, to solicit their orders, but he thought it a waste of time to do so. On returning to London, he was asked how it was he had not obeyed his instructions, and he replied he could not afford the time, and it was of little use. He was at once informed that the chemist was the dentist of the future, and unless he did look them up they (the firm) would be compelled to get another traveller.

I ceased to do business with that firm on the death of that loyal traveller, but have little doubt the houses all make it a purely business concern, and supply the just and the unjust with their richest blessings with equal politeness.

It is hard—very hard lines for a man, who is a capable dentist, perhaps holding many public appointments to be obliged to see himself thus being elbowed out or the way, in order that he may maintain the status of his profession. No ride on a cycle, or horseback or walk before breakfast will heal his nervous irritability, and he simply dreads to ask for his bank-book. Six or eight hours hard work in his surgery, or work room, would be the finest tonic for him provided he got his fees down when the work was completed—and did not have to wait for years, and finally fight for them in the County Court. When I think of the wonderful progress Dentistry has made, or is said to have made as a profession at our after dinner meetings, when we are being flattered by our guests, and we feel like millionaires basking in the sunshine, I sometimes wonder if we have not been going it too fast, and if, after all, in the sweet bye-and-bye the public will not stick to the man who can do his work, rather than run after the newly-fledged chicken of many letters, and more science than practical knowledge. I suspect many dentists, who in the nature of things, would have liked their sons to have succeeded them, and who have ample opportunities for teaching them all the really essential parts of their profession, will not be able to afford the purely ornamental adjuncts, of which we are hearing so much just now—the peacock's feathers—and will be driven to find other and less expensive occupations for them—or on the other hand if they determine to go the whole hog, come what come may, will eat the bread of carefulness, and sleep the night with open eyelids. This all seems a mournful dirge of dental neuralgia—but I doubt not, and I am sorry, that it will find many an echo– it is the same with the medical—the same with the clerical professions—we are hanging ourselves with restrictions, and we cannot afford to pay for the rope. By all means let us have the Provident and Sick Fund —Dudley Buxton suggests, let us try and keep off the Benevolent Fund, and help it, and let us keep our spirits up, but after all it is the pneumogastric nerve which has a lot to do with the "dangerous profession of a dentist."

REPORTS OF SOCIETIES.

Students' Society, London Dental Hospital.

ORDINARY GENERAL MEETING, held Monday, October 12th, 1891, Mr. E. LLOYD-WILLIAMS, President in the chair. The minutes of the previous meeting were read and confirmed.

Mr. MAY proposed and Mr. COYSH seconded the following new members :—Messrs. Densham, Gosschalk, Bowden, Brown, Freeman, Park, Conod, Henly, Burton, Atkinson, Torpey, Soper, Satterthwaite, Walker, Jones, Badgery, Seccombe, Mellesh, Densham, Halliday, Mudie, Coles, Sumerling, Gabell, Dunlop, May, Gilmour, Bride, Dobbs, Ham.

On casual communications being called for, Mr. COYSH showed two lower first bicuspids with division of the root canal low down into three, both teeth being from the same patient.

The PRESIDENT remarked the case showed how careful everybody ought to be wherever canals had to be treated ; personally, he always commenced by passing down a plain Donaldson's bristle, this was so fine that it would go into almost any canal however small.

The PRESIDENT then called on Mr. Breese for his paper "On some minor operations in and about the mouth." (See page 491).

The PRESIDENT complimented Mr. Breese on his careful and lucid paper, and thought that the best thanks the Society could give him was to have a good discussion.

Mr. MAY said that he must congratulate Mr. Breese on his paper but would like to differ with him on one point, he thought he was too conservative in his treatment of abscessed teeth, especially in the lower jaw, and thought if they were badly gone they ought to be extracted. He thought that whether the roots were long or short, or the sulcus was deep or not, often had a good deal to do with where an abscess pointed. He should like to ask Mr. Breese's opinion on a case that he had had lately, a gentleman came to him with a lower right molar very much decayed and a swollen face, he extracted the tooth but no pus came, after a few days the patient came again with his face more swollen, and the buccinator and masseter muscles infiltrated with pus, and on probing the socket a very small hole could be detected leading in the direction of these muscles. With the regard to the treatment of hæmorrhage, he believed in one good sized plug rather than a lot of little ones ; there was one drug Mr. Breese had not mentioned, viz : Perchloride of Iron, he thought it was a most valuable styptic.

Mr. Coysh said that he could not understand Mr. Breese's incision, for opening an abscess which should be parallel to the root and not transverse to it. Mr. Breese had made no mention of opening the antrum by plugging a very small existing sinus, he had seen it done several times and it answered very well. He should like to ask Mr. Breese how it was that after the extraction of an abscessed tooth you always got excessive hæmorrhage.

Mr. J. P. Smith congratulated Mr. Breese on his paper, and also on the fact, that though on a surgical subject, he had kept entirely to what was a dental surgeon's work. He thought there were two very important things in opening an abscess, that the lancet should be both sharp and clean, personally he did not care where he opened it, but did so where it pointed, inside the mouth. For hæmorrhage he used a saturated solution of tannin in spirit ; he preferred to use small plugs, and if one got left behind it did not much matter.

Mr. Holford said there was one thing that he could not agree with Mr. Breese, and that was, when he spoke of making an opening into a periosteal cyst, and cutting off the necrosed end of the root, and polishing it smooth and so trying to save it, he thought that the stumps or teeth as they were the chief cause of the cyst they ought to be removed the first thing. With regard to hæmorrhage, he stated that he was a student at St. George's, when a man bled for six days after the removal of a tooth and died from exhaustion, though every remedy that could be thought of was tried on him.

Mr. Mordaunt said that Mr. Breese had omitted to mention turpentine, which was a well known styptic.

Mr. Preedy said that one operation Mr. Breese had not mentioned, which though only a slight one was by no means easy to do, and that was to cut away the gum over a painful erupting wisdom, he thought the best way was to apply cocaine, and use either a guillotine or short curved scissors and snip it off.

The President said he did not think there was any particular difficulty in opening an abscess, for himself he always opened where he found pus, and if he could find no collection of pus formed he did not open. With regards to Mr. Reeves' operation for depressed cicatrix of leaving silver wire in the wound and allowing it to heal over it, it did not seem good treatment. He did not think the length of the root, or the depth of the sulcus, had much to do with where an abscess pointed. He remembered a case of a patient with an abscess on some lower molar roots, which a sinus running down just under the skin and opening just below the clavicle. The opening used to close and then the pus filled it out, and it used to be opened by the local surgeon who could not think what caused the abscess, till it was suggested to take out the roots, when the sinus healed at once. He thought Mr. Breese was rather too conservative in his treatment of teeth connected with antral abscess, any teeth even suspected of being the cause ought to be extracted at once. He thought alveolar cyst a much better name than periosteal cyst, and in opening these cysts the best instrument to use was a Paget's knife. He certainly always thought that these cysts were lined with epithelium, but the next one he had to treat he would make a section of it and see. He did not think abscessed teeth bled abnormally except in bleeders, if a patient with a clear skin, fair hair, and blue eyes, came and wanted a tooth extracted, it was always best to ask them if they usually bled much, as it was always that type of person who had the hæmorrhagic diathesis. In the treatment of hæmorrhage, he believed in one plug for each root, and did not think that Mr. Breese had quite emphasized enough the importance of clearing away of all clots, &c.

Mr. BREESE on being called upon for his reply, said with regard to their President's remark on opening abscesses, it might be safe in a gentleman of his experience, not to take the precautions which had been mentioned, but for a student just commencing his career, he thought it was far better to act according to the rules given. Mr. Lloyd-Williams had expressed the opinion, that the leaving in of the silver wire in the operation performed by Mr. Reeves, was a piece of bad surgery, the point was, however, did it succeed or not in accomplishing its object, it was claimed for the operation that it did. In cases of antral abscess he quite believed in extracting diseased teeth, he had advocated perforating the canine fossa in those uncommon cases where all the teeth were sound. The name "periosteal cyst" was no doubt an unfortunate one' but as the only literature on that subject speaks of them by that name, he had adopted it. With regard to the epithelial lining of these cysts, he thanked their President warmly for the promise he had made to cut a section of his next case, but it must not be forgotten, that Mr. Eve had already made several, with the result that none had been found. The extraction of the tooth had been urged by Mr. Lloyd-Williams and Mr. Holford in all cases of cyst, it was no doubt generally, but the operation of excising a portion of the root had been done successfully by a member of their staff in more than one case. Mr. May's case was very interesting, but in seeking for explanation of it, it must not be forgotten that an abscess was pus forming as well a pus containing, and that sometimes pus burrowed in a remarkable manner along the course of an artery or between the fascia of muscles. Perchloride of iron had not been mentioned, because so far his experience had been confined to tannin. He had not found the plugs come out of the socket as was suggested by Mr. Preedy. Mr. Coysh had said that the incision suggested in dealing with abscesses would be at right angles to the direction of the root, this was a mistake, it should be parallel. As to enlarging the antral opening by plugging, the trocar did that at once, and there might be a chance of the plug finding its way into the artrum, and thus causing trouble. With Mr. Smith's remarks on the sharpness and cleanliness of instruments he of course agreed. It was not desirable to leave a plug of cotton wool in a socket, it became very offensive. Mr. Holford's case was the same he believed, as that mentioned in Tomes' last edition of "Dental Surgery," and it was in connection with that case that Mr. Tomes had suggested dealing with the inferior dental artery as described. Turpentine was an old remedy for hæmorrhage. It only remained for him to thank them for the kind remarks passed on his paper. He, however, felt uncomfortably reminded of the words "praise undeserved is satire in disguise."

The PRESIDENT then proposed a vote of thanks to Mr. Breese for his very able paper, and announced that the next Meeting would be November 16th, when Mr. Hayward would read a paper on "Antiseptics used in Dental Surgery."

Dental News.

National Dental Hospital and College.

THE ANNUAL DINNER of the Staff and Past and Present Students and Distribution of Prizes will take place at the Holborn Restaurant, on Friday, November 20th, at 7 o'clock. John Langton, Esq., F.R.C.S., in the chair. Tickets to be obtained from the Secretary at the Hospital.

Charing Cross Hospital Medical School.

THE Entrance Scholarship, value 100 guineas, has been awarded to Mr. J. R. Langley, and that of 50 guineas to Mr. Howard Green.

Faculty of College of Surgeons and Physicians of Glasgow.

At the October Sittings of the Board of Dental Examiners, the following Candidates having passed the necessary Examinations were admitted Licentiates in Dental Surgery:—Abraham Berlyn (Birmingham), Charles E. Bromley (London), Percival Leigh (Leeds), Franklyn C. Lewis (Folkestone), Joseph C. Preston (London), Phillip B. Reading (Sydney, N.S.W.), Joseph Royston (Douglas, Isle of Man).

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

To the Editor of the "DENTAL RECORD."

BROMIDE OF ETHYL (C_2H_5Br.) *versus* NITROUS OXIDE (N_2O.)

SIR,—In view of the great amount of suffering that may be prevented by the bromide of ethyl, especially where nitrous oxide gas in a condensed form is difficult to obtain, I send you this communication, intending later on to ask you to publish the result of some experiments upon animals, and more detailed remarks upon its action in the human economy.

I have been using bromide of ethyl C_2H_5 Br., both as an anæsthetic for operations of short duration, and as a prelude to the administration of ether or chloroform, in the same way as we use nitrous oxide in the London Hospitals.

As an anæsthetic for dental purposes it is very taking, being so quick in its action and easy to administer. I find that from 15 to 30 grammes, according to age, sprinkled upon the flannel of a wire chloroform inhaler, induces a period of insensibility sufficient for most dental requirements. The inhaler and the lower parts of the patient's face should be enveloped in a napkin, so as to let as little air as possible to enter and dilute the vapour. This given in a concentrated form, insensibility is soon induced, and perhaps it is best not to permit of more than one or two stertors before removing the inhaler. Since the drug does not increase the rate of the pulse, or cause cyanosis, the aspect of the patient is not likely to alarm those present, as is the case when nitrous oxide is given. Occasionally there is some excitement, but usually the sleep is rapidly produced and tranquil, the return to consciousness is generally sudden and complete.

Seeing that the number of operations performed during the administration of bromide of ethyl must now be very large, we should not let some reported accidents prevent our using it, for no doubt the cases that gave rise to these reports were brought about by the careless use of an impure preparation.

I feel sure that pure freshly-made bromide of ethyl, in skilled hands, is a safe and valuable anæsthetic.

Locally, it resembles the chloride in its action, so that if it touch the tongue or lips it freezes them and causes an unpleasant feeling for even a couple of hours, otherwise, after effects are not troublesome, though vomiting may occur.

Yours truly,

G. Cockburn Smith.

SYRINGING THE CAVITY OF TEETH.

Sir,—Will you allow me to call attention to the absolute necessity of invariable syringing the cavity of a tooth with warm water before stopping in every case. The very dirty habit many have of leaving the *debris* of the infinite number of loose dead particles in the tooth, and vainly trusting to the iodoform or carbolic acid to complete what the instrument cannot possibly do, is a fearful cause of the tooth decaying again, and the patient eventually losing the tooth, and the dentist losing the confidence of the patient, as well as his professional reputation. How often we hear people say that it is no good their teeth being stopped as they will always decay again! Three or four vigorous applications of the syringe before the antiseptic is applied gets the cavity of the tooth perfectly clean (after the instrumental operation is finished in preparing for the stopping). It is well always to allow the patient to empty the mouth each time after the application of the syringe, until the water comes from the mouth quite clear, which is upon the third or fourth application. The force of water through the syringe well applied is most effective in removing the loose invisible particles of dust, which are mischievous if left in the cavity of the tooth, as they are liable to set up further decay.

Yours, etc.,

Cleanliness.

APPOINTMENTS.

LONDON DENTAL HOSPITAL.

Dr. Dudley Buxton and Dr. F. Hewitt to be Anæsthetists *vice* Messrs. Bird and Mills, *resigned*. Messrs. Carter Braine and Henry Davis to be Assistant Anæsthetists.

THE DENTAL RECORD, LONDON: NOV. 2, 1891.

DIRECT REPRESENTATION AND THE DENTAL PROFESSION.

A letter from Mr. Morton Smale, which appears in our medical contemporaries, cannot but excite much attention in the profession. We have always urged our readers who have votes for the election of the direct representatives of the profession to avail themselves of their rights, and not as is too frequently done, disenfranchise themselves by letting the poll pass without voting. Mr. Smale's contention is, and we must endorse the wisdom of his argument, that as Messrs. Wheelhouse, Foster and Glover have won the good opinion of the profession, and have done their share of the work of the General Medical Council in such a way as to gain the full confidence of their constituents—the medical profession at large, it would prove a sad mistake to divide the electorate by suggesting some special candidate to represent our branch of leechcraft. This our readers may say is going back from our own contention, when some months back we urged the candidature of some one specially briefed for the dental profession; but such is not in reality the case. The time is not at present ripe we are assured for our promoting a dentist representative, if it were really desirable, as things are at present constituted, and to run the risk of ousting really sound and far-seeing candidates with the possibility of splitting the vote, while we failed to establish our own claim to have a dentist upon the General Medical Council would be nothing short of a fiasco. In the letter to which we refer there are three important points insisted upon as being proper questions for dental surgeons to urge for consideration at the hands of those who are to represent their interests, interests which are of course included in those of the profession at large. We quote Mr. Smale's words: First, that similar resolutions on the question of "covering" to those adopted for the medical profession should be extended to the dental profession, for this reason: A large number of registered dentists carry on branches in various towns by means of unregistered assistants, thereby doing much harm alike to the public and legitimate practitioners. The widows and executors of deceased dentists moreover can carry on the practices of the deceased by similar means.

Secondly, it is within the power, if it be not a positive duty, for the General Medical Council to appoint visitors to attend the various examinations held in Great Britain and Ireland. Some of the colleges granting a dental diploma appear to confer that diploma upon those whose knowledge must be of a very meagre character; and if all the examinations could be visited the standard very probably would be raised. It is certainly undesirable that gentlemen appearing *sine curricolo* before an examination board should be allowed to obtain the diploma because the standard of the examination is of a low order. "Thirdly, Mr. Smale suggests, there is a discrepancy in the regulations which permit one apprentice who because he has the good luck to be articled to a dentist practising in a town, where a general and dental hospital and school exist, can therefore by allowing the apprenticeship and hospital training to overlap, obtain his diploma in four years whereas the apprentice who cannot effect this overlapping of the two branches of study must take five years before he can obtain his diploma. Mr. Smale advocates a compulsory five years all round.

We do not pretend that Mr. Smale's views are the views of all of us, or that when these three questions have been duly considered by the General Medical Council and properly dealt with that the millenium of dentistry will be upon us, but we cannot but believe that no more clear exposition of the most burning matters of importance to us as a profession could have been outlined than has been done by Mr. Smale, and we trust that if, as he seems to expect, dentists will vote, solid, for Messrs. Wheelhouse, Foster and Glover that they will consider that they are bound to address themselves to these questions, and deal with them in a manner, which will by its breadth and thoroughness satisfy the profession. The vote of the dentists will we are assured be given to those who have shown themselves steadfast and yet progressive, and we trust that whoever are the successful direct representatives elected that they will remember the responsibility which rests upon them, and devote the attention, and seek the advice of dental assessors when purely dental matters have to be discussed at the table of the General Medical Council; for although the dental is a part of the medical profession, it is quite peculiar among specialties and cannot satisfactorily be dealt with in a way precisely similar to that which suffices for questions affecting other branches of the healing art.

We learn with the deepest regret that Mr. J. Smith Turner has suffered that greatest of all bereavements, the loss of his wife. We venture to offer him our heartfelt condolence.

Journalistic Memorabilia.

QUOTING Dr. Jacobi in the *Cosmos*, Dr. Abbott says that the various defects visible from time to time in enamel are due to diseases which the child may have suffered from during the development of the enamel. Acute exanthems are said to produce dispersed excavation, acute inflammatory diseases the furrows, and rachitis has caused the entire absence of enamel. The incisors of rachitic children are usually small, appear late, and very subject to caries. The mucous membrane of the mouth is very irritable, being accustomed only to milk in the early stages of extra uterine existence, every change of diet, therefore, of a stimulating kind will act as an irritant, producing hyperæmia or inflammation of a more or less severe kind, *e.g.*, aphthous, erythematous stomatitis ; so we can easily appreciate the probability that inflammation will partially destroy either the original epithelium or the enamel organ, and thus be the direct cause of defective enamel. A simple obliteration of a number of blood vessels would be sufficient to interfere with the proper deposition of lime salts, and if with the inflammation and obliteration of blood vessels hæmorrhage takes place, it is probable that pigmentation in the imperfectly calcified prisms would be the result.

The *Western Journal of Dental Science* contains an article on the importance of cleanliness in the mouth. The writer insists, among other things, that no dentist should allow a patient to leave his surgery without first putting the mouth into a perfect state, necessarily including the absolute removal of every particle of tartar, &c. This cannot have too much attention bestowed upon it, knowing as we do the deleterious effects consequent on its non-observance. Under the same heading comes the all important question of dentifrices, both liquid and otherwise. The evils resulting from the indiscriminate use of patent preparations for the teeth cannot be too strongly impressed upon patients, women particularly, who are only too ready to use any wash, provided only it makes their teeth white. Women cannot, or, perhaps it should be said, will not, use a toothpick. but they can and should use its very able substitute, floss silk and tooth powder, which, though not perhaps doing its work in the same manner as a tooth pick, still occupies a very important position as a preventative against erosion.

Dr. Weld in the *International Dental Journal* says the enamel is more soluble in a weak solution of lactic acid than a strong one, and that as lactic acid is the probable acid contained in the mucous secretions round the necks of teeth, lactic acid is the probable cause of erosion.

From the *Dental Cosmos.*—R. Ottolengui, in an article on Gold Filling, lays great stress on the necessity of enlarging crown cavities in order that after the drill has done its work they may be thoroughly examined to see that every particle of carious dentine has been removed, and that the cavity may be finished with hand instruments. He advises in bicuspids and lower molars but one filling, after fully cutting out the sulci; in the superior molars two fillings may be inserted where there is a marked ridge between the anterior and posterior pit. Where the intervening groove is at all fissured the cavities are to be united ; similarly, if the buccal groove should be at all carious the crown cavity should be extended in that direction too.

Rapid method of inserting and finishing Contour Filtings without the aid of a Matrix.

Dr. J. E. Waitt, says :—First, space by a separator or tape, to the width of a No. 3 or 4 separating file. Apply the dam in the usual or the following manner : In the case of a superior second bicuspid, lay the dam over the face and apply it to the mouth in the position it is to occupy, then with a pencil mark the centre of each tooth from the right superior lateral to and over the first molar. Punch out a hole for each tooth and then apply the dam, beginning at the lateral and working backwards. Over the molar slip a clamp, or, if close to the second molar, pass a ligature up between and leave it. Then with a thin and flat burnisher turn the dam upon itself, around each tooth, and dry with cotton.

Next prepare the cavity as usual, except do not cut any retaining points, but in their place cut a fine grove across the cervical wall and down the buccal and palatal or lingual walls with a fine bur, and make the opening on the crown surface when possible, slightly dovetailing towards the body of the tooth ; then with a sand-paper disk, smooth the mesial or distal surface, as the case may be. The gold to be used becomes the next feature, and must be a soft gold easily moulded under a burnisher. In using soft foil take No. 4 soft, cut in one-half sheets and roll to about the size of three-sixteenths of an inch diameter, and flatten. Each cylinder to be of a length slightly exceeding the depth of the cavity from front to back, and its size in the square to depend upon the width of the cavity and the method of condensation.

Never cut a strip in two lengthways to get a short cylinder, but rather fold it upon itself lengthways, and proceed to roll as in the usual manner. With many of these cylinders of various sizes rolled during leisure hours, or by an assistant, considerable time may be saved at the moment of greatest strain to yourself and patient. Now place a floor of these squared cylinders across the cavity, allowing the ends to extend slightly over the edge, and with a large round or foot-shaped plugger partially condense this layer ; then, with a couple of pieces of No. 4 foil (Boston D. M. Co.) made cohesive and *single* thickness placed over the partially condensed surface, the whole is thoroughly condensed with a smaller round plugger, care being taken not to allow the plugger to enter the gold extending over the edge. When thoroughly condensed, pass a thin, flat burnisher up by the ends, and, with a slight pressure, force them over the edges of the cavity in each direction making the burnishing carry the gold over the edges, thereby locking it and preventing tearing it out. Increase the pressure upon the burnisher until the ends are well condensed and shaped to the desired contour.

When this point is reached, place a couple of thin layers of cohesive gold over the whole and condense well. This is done for the purpose of locking each layer and giving edge-strength to the contour. Burnish this edge well, and then proceed with your second layer of soft cylinders, as you have done with your first, with the exception that the middle cylinders are to be slightly longer than the side ones, to allow for the swell of the contour. Burnish, and proceed as before. The crown surface can be finished by building up to the desired shape with cohesive gold, which can always be made to unite with the soft gold, if the first union is made with pieces of a single thickness, well united by mechanical force, and condensed with the soft gold. Contour fillings built in this manner do not need any finishing with a file or sand-paper, as the whole surface is left finished at each stage, and any amount of overlapping gold is burnished off, leaving a clean smooth edge, and highly polished. By this method the entire wall edge is constantly in view, and one point is not left for another until the former has been completely filled and finished, which alone is enough to commend this method to our careful consideration.—*The Ohio Journal of Dental Science.*

Dr. Rodriques Ottolengui gives some practical suggestions about Plaster of Paris.

First, then, for a few facts: Plaster will set more rapidly if tepid (not hot) water is used, than if we take cold. A clean smooth cup is the most convenient vehicle in which to mix plaster, rubber bowls being especially unsatisfactory to one who has become accustomed to the thin cup. New cups should be obtained as often as the surfaces become checked so that the plaster is difficult to remove. If an excess of material has been used, scrape it out into the waste box, and what little there is left in the cup will easily come away when hard by filling the cup with water. To mix plaster, put in the cup at the outset about as much water as judgment indicates will be needed. To add water later is a mistake. Drop in the plaster a little at a time, allowing it to disappear below the surface before adding any more; repeat this till the plaster protrudes above the water, which refuses to take up any more. Then stir vigorously with a smooth *clean* knife and a mixture moderately stiff and perfectly smooth will reward you. The more it is stirred the more quickly it will set, and the stiffer it gets. Use it for the purpose in hand when it has reached the required consistency. If on mixing it is found that a miscalculation has been made as the mass is thin, do not add more plaster ; such a step will ruin everything. Pour off any excess of water, and then stir till stiffening begins. Mix enough plaster at the outset, because to mix a second batch, especially in flasking, gives a mass one part of which will set sooner than the other, which is often very undesirable. In taking an impression of a large surface, this sometimes becomes necessary. Then mix the first batch quite thin and flow it over the entire surface of the object of which a duplicate is desired. Then add other plaster until the impression is as thick as needed. By the time the last lot has set, the first will usually be hard, and all will be well.

In mixing for impressions of the mouth, use fine plaster, add a little salt and a little powdered pigment ; Venetian red or Spanish brown serve admirably. This will produce a thick setting tinted impression material, which can be readily detected from the model which is to be poured into it. The plaster must be fixed as described, care being taken not to have it too thick. Do not stir until in the presence of the patient. Then stir until it can be felt that the mass has begun to stiffen. Fill the cup rapidly, carry it to place firmly and hold it there motionless. If there is a high roof put some plaster in the vault with the knife. If it is feared that the buccal portions of the molar teeth may not be reached, place plaster there also, before inserting the tray. As soon as the plaster begins to set in the cup, chop it up so that it may be more readily removed when the cup is to be cleaned. As soon as the material in the cup will fracture sharply, remove the impression regardless of possible fracturing. If this does occur, collect all the pieces from the mouth ; they may be replaced so as to form a practically perfect model.

To procure a lower impression, put but little plaster in the tray, place plaster around the teeth in the mouth with the knife, being sure to cover all surfaces of the teeth ; then quickly insert the tray and let the mass harden, and remove as before. In very difficult cases, where the teeth are long and perhaps loose, dispense with the tray altogether. When the material is sufficiently set, split it into sections with a sharp pen-knife, and afterwards join the fractured pieces together as before. To pour a model, use a shaving brush, and with soap-lather thoroughly soap the surface of the impression, especially in the pits for teeth, and be careful to wash all the suds off afterwards otherwise the surface of the model will be pitted.

Mix the plaster moderately thin. Have the surface of the impression saturated, and a little water in the pits for the teeth. Start the plaster into the last molar and let it fill up and run over into the other pits, forcing out the water ahead of it until all are filled. Then turn the impression over and shake the plaster out of the impression back into the cup. This insures a thin film of plaster over the entire surface. If the process is now repeated and the impression slowly built up without turning it over, the result will be a most accurate model.

Where the model is to be used for gold work, and dies must be made, if there are any teeth present, a pin should be placed in each. In doing this cut the heads off, and later the plaster teeth may all be broken off, the pins withdrawn, the dies made, and the teeth readily turned to position, where they may be again fastened by using a camel's hair brush and plaster very thin. In repairing models in this way, take a saucer with a little water and drop in a little plaster, but do not stir it. The plaster may be taken up with the brush placed along the joint between tooth and model, and as it soaks in the excess must be wiped away with the brush filled with water. When it becomes desirable to trim a model, after it has lain around a day or two, and so become quite hard, dip it in water for a few minutes, and it may be readily cut with a sharp pen-knife. If an impression is filled and allowed to stand over night, drop it into hot water, and the steam generated will make separation more easy. Models should always be well soaked before more plaster is added to them. If, however, it is desired to preserve a model, upon which a plate is to be vulcanized, it may be readily done by soaping it slightly and flasking it as dry as possible. With care, after vulcanization, the investment may be removed without injury to the model, which, if then allowed to dry, may be separated from the plate. To mix plaster and sand for investment of gold pieces, drop sand into water, and without stirring pour off as much water as will run out. If now half the quantity of plaster be added, vigorous stirring will produce a mass of the proper consistency. At first it will appear stiff, but by stirring the sand will soon yield enough water to saturate the plaster, when the whole will become incorporated. Never varnish plaster under any circumstances, except for moulding in sand.—*Dental Mirror*.

Selections.

THE RELATIONS AND RESOURCES OF OUR SPECIALTY.

BY HORATIO C. MERIAM, D.M.D., SALEM, MASS.

To the Greeks, *Physic* meant nature, and *Physician* Naturalist. These definitions are not without value to us now, when in the evolution or growth of our speciality there seems to be developing a class of practitioners who, basing their practice on a study of nature, her laws and forms, work for their preservation and restoration, thus enlarging the scope and range of our speciality, so that where we formerly heard of a fine operator, we now hear of a good adviser, and in place of resting reputation on a fine filling or a "good job," we say that such a space was well treated, the arch well preserved, or that the mouth showed good care. Thus we have practitioners who draw their theories from nature, leaving behind that other class of practitioners who draw their patients to suit their theories.

Nor are the former less free because free within Nature's limits. For the acceptance of her as a guide and teacher implies that, in order to follow this guidance and teaching, they are to be free from many of the restraints that hamper and limit commercial pursuits. The professional man thus following and working can say, in the language of the Epistle to the Phillippians, "Not as though I had already attained, either were already perfect: but I follow after, if that I may apprehend that for which also I apprehended. . . ."

There goes with this, of course, freedom to follow, that Truth may be found and shown to other men, and as it is freedom to serve in a cause that is greater than self, of such a professional spirit it may be said,—

"How hap'ly is he born or taught
Who serveth not another's will;
Whose armor is his honest thought,
And simple truth his utmost skill."

This would seem to meet an objection that I have met among those who have not studied ethics.—*i.e.*, "*our acts their motives and tendencies*," as they have been studied in this Society. It was said to me, "You do not allow your patients to dictate to you, and why should you expect to dictate to those who supply you?" "On the contrary," I replied, "every patient dictates to us. Every patient comes to us with certain conditions of the mouth, the teeth, or the functions of which they form a part, that dictate to us, and our reputations are made by the clearness with which we read those conditions and the ability with which we bring the resources of our speciality to meet them." They thus must needs have all the resources of nature and of art as an armamentarium placed at their disposal, who are to defend the temple whose builder and maker is God. Thus the physician or " naturalist " called to treat the eye, the ear, the teeth, the crooked limb, or the weary brain, accepts the dictation of their condition, and in accepting secures the right to dictate how the disease or deformity shall be met.

It may be some Bigelow consulted regarding the hip or stone in the bladder, some Bowditch regarding the lungs, but whosoever the man or whatever the disease, all the claims of humanity assert his right and his liberty to prescribe to meet disease as he finds it. Shall this workman lose his right hand ? Still the surgeon's prescription, though it is to be done by the hand. Shall this patient leave home and family and live in another climate ? still a prescription. Shall this arch be enlarged or reduced ? This foot twisted or cut ? Whatever the case, whatever the remedy or treatment indicated,

> ". . . the odors of myrtle or pine,
> Breeze of the prairie or breath of the sea,"

it still remains a prescription.

So we should assert that with us rests the right of prescribing for our patients' needs, and the dictation, or direction, if you like it better, as to how these needs shall be met.

We know that every thought or action represents destruction. The sermon of the ecclesiastic, the song of the poet, the sigh of the lover, the cheer of the patriot, all represent the destruction of a certain number of cells, whose destruction has set force free. Even holding the faith that saves or the doubts that distress calls for physical system that must be continually undergoing destruction and repair, and as growth or action is founded on the destruction of previous growth, new cells being constantly produced to replace those used, we have " the sum of all action,—life."

A speciality having care of a great and important function, one which is so essentially connected in supplying the needs of all other functions that make a complete life, must have a growth as great as the needs to which it ministers, and resources as great to meet those needs.

We have heard the claim that "our specialty owes all it is to its instrument-makers, and that they have only to cease making for a time to insure our destruction," and the other claim that "they own so many patents that they can take three millions a year from our specialty where they take one now." Still, as there was much in the world before we came, and, strange to say, much will be left in it after we leave, I am inclined to think that they take themselves a little too seriously and that the great and terrible day of an instrument-maker's wrath will not come to us this year. We have but to open our eyes to the great resources around us, and connect our specialty more intimately with them.

"You remember how, when the city was besieged, each artisan who was called upon in council to suggest the best means of defence recommended the articles he dealt in ; the carpenter, wood ; the blacksmith, iron ; the mason, brick ; until it came to be a puzzle to know which to adopt. Then the shoemaker said, 'Hang your walls with new boots.'"

Now, all these things are needed in the defence of the city, though perhaps not quite in the way that the dealers proposed ; the wood, the iron, the bricks, the boots, would all be of service, but there was needed some one to prescribe for each its fitting place.

We may perhaps feel that the English makers in consenting to advance the price of teeth in England lost all claim to special sympathy ; nevertheless, we resent as an interference any attempt to exclude from American practice anything required by us in meeting the needs of our patients.

We should give our workmen all the credit due, payment and praise also, but not the power to dictate regarding what shall be used in our practice. Praise when they do that which is right and make that which is good, but make clear also that they are to make that which we think is good for the needs of our patients, and for the development of our specialty.

They might build works as great as the Pyramids of Egypt, and build them well, but if they were not what we wished to prescribe, or to use in making our prescriptions, they would be of interest only as monuments of power or bigness.

"If they be not big for me,
What care I how big they be ?"

There will, of course, be a great difference in the development and position of those practitioners for whom makers make that which they wish to use, and the other class of practitioners who are obliged to use those thing that makers wish to make.

Perhaps *development* should have been included in the title of this address, for the effect of controlling our relations and resources will have much to do with the development of our specialty.

We need the increased skill of the hand, secured by creating what the brain has conceived ; and as the hand and brain are developed by reciprocal action, we get increased brain-power with increasing skill of the hand.

The business of the busy practitioner is not to invent new resources or instruments for their own sake, but to adapt resources to patients.

Some of the finest development in our specialty is seen in connection with the ability to use the old, but there are some whose development we should have greatly missed had they not worked out their conceptions, and given them to us in forms of beauty and marvellous adaptability.

Just as the same blood builds and nourishes the foot that walks and the brain that thinks, so we do not feel that anything can be held as not included in medicine because mechanical or of use in other ways.

" Pressure produces absorption," is a law alike in orthopedics and in orthodontia. Should a physician refuse to use nitre because it is also used in the arts, in gunpowder, and in agriculture as a fertilizer ? We cannot feel that anything that can affect our specialty in any way is not to be studied in connection with it, or can be rightly studied as isolated from " nature," " medical science," or " the healing art," but by keeping clear to ourselves and our student that our work is a part of a system for the making the best of our race. We connect it with interests as great and far-reaching as any of the problems of life. " Is there anything better in a state," says Plato, " than that women and men be rendered the very best ? " Violators of nature can never be held in high esteem. It is quoted from Shakespeare, that, " One said a tooth-drawer was a kind of unconscionable trade, because his trade was nothing else but to take away those things whereby every man gets his living."

I beg to quote somewhat at length from Dr. Holmes's "Medical Essays," this broad definition and description of medicine.

"Medicine, sometimes impertinently, often ignorantly, often carelessly called 'allopathy,' appropriates everything, from every source, that can be of the slightest use to anybody who is ailing in any way, or like to be ailing from any cause. It learned from a monk how to use antimony, from a Jesuit how to cure agues, from a friar how to cut for stone, from a soldier how to treat gout, from a sailor how to keep off scurvy, from a postmaster how to sound the Eustachian tube, from a dairy-maid how to prevent small-pox, and from an old market-woman how to catch the itch-insect. It borrowed acupuncture and the moxa from the Japanese heathen, and was taught the use of lobelia by the American savage. It stands ready to-day to accept anything from any theorist, from any empiric, who can make out a good case for his discovery or his remedy. 'Science' is one of its benefactors, but only one out of many. Ask the wisest practising physician you know what branches of science help him habitually, and what amount of knowledge relating to each branch he requires for his professional duties? He will tell you that scientific training has a value independent of all the special knowledge required. He will tell you that many facts are explained by studying them in the wider range of related facts to which they belong. He will gratefully recognise that the anatomist has furnished him with indispensable data, that the physiologist has sometimes put him on the track of new modes of treatment, that the chemist has isolated the active principles of his medicines, has taught him how to combine them, has from time to time offered him new remedial agencies, and so of others of his allies."

Our specialty can assert that we have a claim on all people that have the best at heart; that just as it is the duty of the good citizen to be interested in government, churches, schools, science, the administration of justice, and maintaining the public health, it is likewise their duty to see that our specialty is unhampered, that we are not isolated, but make a part of a great system that helps men and women to be and to do their best.

Life has become so complex and interwoven that the competent man has much put on him to do, and, like the locomotive, must be kept in the best order possible to do it. Still comfort breeds forgetfulness; but the members of a community do not discharge all their obligation to our specialty in paying the bill of their own dental attendant.

Our schools should not be isolated, but become known as correlated with educational institutions. A wise course has in the past few years been adopted by the Harvard Dental School of making more of her position as part of the University, and thus securing the attention to the work she is doing for the good of the community, and, as the world always helps those that she can see are helping others, the fund for the school's endowment has grown more since this policy was adopted than in all the previous years.

The advantage to be gained by having our schools advertised in educational journals, especially in that we thus reach teachers should not be overlooked ; for many bright men often teach before selecting a profession, and we shall also extend the relations of our specialty.

Let us as far as possible cease to be exclusive, learn to be liberal and connected as we can be with the world around us. It was not pleasant some years ago, on going into a shop that supplies materials and apparatus to the Institute of Technology, the medical schools, and other educational institutions, to find that they did not know of the dental schools.

It is a good rule to trade with those who can consult you in return, and, being known to all makers and dealers in articles we can use, we shall secure wider relations for our specialty and increased employment for ourselves.

During my service in the Massachusetts Dental Society, I found that had I been practising in Boston my acquaintance and practice would have been increased by the wider contact gained in helping secure exhibitors, and we should all gain by scattering our purchases where they would do us the most good. Every dental school can secure a directory of all who can make or deal in any of our resources, not only for the economy in purchasing, but for the increased contact with the world and the increased influence for them and their students that they will gain.

The same course should be pursued in seeking advertisements for our journals. Many of the dealers in small tools and various articles we use, sell, I have been informed, many thousands' worth in a year, that come to us through the " depots." And by securing advertisements of such dealers we shall gain increased influence and profit for our journals.

One of the disadvantages of the combination and its control of journals seems to be, that in order to prevent competition, by limiting the number of those who can engage in dealing in our resources, it must strive to prevent a knowledge of their source and relations.

In addition to my dental journals I take the *Druggists Circular*, which, besides giving many valuable articles on medicine and chemistry, usually has a number of pages giving the composition and directions for making many preparations, both professional and proprietary.

Its advertising pages represent a wide constituency, too numerous to mention here, but which if followed will show much of value to us in materia medica. The criticisms of chemists and pharmacists on antiseptics are of special value, but the study of our relations and resources will lead us into many fields.

The chemist and assayers have much of interest to us now, but much more can be done by interesting them in our filling-materials and metals. We have united on a series of college text-books, why not unite on a series of college filling-materials ? What better work can be done by a society than to take up and bring this matter to the attention of leading chemists and pharmacists ?

The makers of fine soaps can also be asked to advertise in our journals, and so can dealers in wax and the gums that enter into modelling compounds. Thus even asbestos and charcoal, crocus and pumice, polishing compositions and whiting, can all be made to contribute to our journals, as we must constantly pay tribute for them.

The names of the chemists who analyze tooth substances can be put in the list, together with the artists who can make cartoons to illustrate our papers. As hospitals have their formulæ, so every dental school can have its formulæ for gold-plate solders, tooth-bodies, etc. We should not be quite so apt to go to the extreme in advocacy of any one thing, like copper amalgam, if we had a wider discussion of metals. I have never used it, because I heard nothing said in its favour that convinced me that it was as good for a soft, poor tooth as what I had done for years. When called to treat a tooth so poor as to need its tubuli filled, I cauterize with nitrate of silver, and afterwards introduce my amalgam.

In schools at a distance from manufacturing centres, a room could be properly given a workman who was trained to make and repair instruments, regulating appliances, etc. The early years of practice with young men will be made much easier, and their value as assistants increased, if they are trained in the making of appliances.

"Every man to his trade" was an old motto. Every man to his part of a trade is the danger of to-day.

The manufacturing desire to control and the need and benefit of that system is so great in many ways that in some of the watch-factories workmen are employed who can only make one part of a watch, and who may be ignorant of the work done in the next room.

We hear of the "rights of capital," the "rights of labour"; let us hear now of the "rights of occupation,"—the right to learn a trade, the right to engage in business. The Crispins were not given a charter in Massachusetts because they proposed to limit the number of apprentices to be taken. We have not heard that any combination which has the effect to limit the number of persons that can engage in an occupation has obtained a charter there.

The schools for teaching trades have come into being since this exclusive spirit has developed among workmen, exclusive action being met by liberal action.

The time has, perhaps, not yet come for teaching the making of our instruments as a trade, but some kindred trades could be united in a course at industrial schools. Mould-making for teeth, and die-sinking, surgical instruments and appliances, oral, dental, general, and electrical, would send out men who would not fail of employment, perhaps in some small shop as owner, or often in some school or hospital in any part of the world. Teaching the making of our materials in the schools of pharmacy is also one of the possibilities of the future regarding our resources, and also one of the means for broadening our relations and development.

Dr. Bonwill makes a valuable suggestion,—viz., to cultivate the capacity to improve, that shows itself among students, so that in the greater variety that would result we should have greater freedom from the combination. I am not able to quote his own language, but I think the above is the substance. A list of the various workmen who can do the work required or have done similar work should be kept to make the suggestion practical.

Dealers naturally wish to narrow the channels of trade; we must, in growing, broaden them. They will not keep things for which there is no demand, they may not wish a demand for things they do not wish to keep.

By reporting the names of small makers who serve us well, we would relieve much of the tension.

If those who are interested in alloys will give us a paper on them and publish the name of an assayer or other competent person who has been instructed by them, a channel of information and supply will be opened that will be of value.

Work like this indicated need not be confined to America, but wherever our speciality has a foothold it will ultimately be needed.

The names of firms given are intended merely to indicate some of the lines that can be followed, and because their catalogues can be had by those interested. The same lines can be followed in other parts of the country and much help of influence and value secured. But the activity of professional life is an essential element and sum of all action and will show itself in many ways. To some it may be given to work on committees, to some to edit, to some to improve instruments, to some to study cements, to some to work with the microscope, to some to investigate medicines, to some to encourage and aid, as they can, those who are doing any work for us, but all should be done as for our speciality to aid its development, while it aids to make the perfect man that is to be. It is not for us to say what form professional spirit shall take, or in what work it shall manifest itself, for like love it will go where it is sent by the angels of our nature ; but it is for us to make as far as we can the crooked places straight, and the rough ways smooth, that it may enter and dwell in our speciality, that light may not go out from among us and leave our souls in darkness. Are there those who think these questions to small for discussion ?

> "There is no great and no small
> But the soul that maketh all."

International Dental Journal.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

DENTAL EXAMINATIONS.

The following gentlemen have passed the necessary examinations, have been admitted Licentiates in Dental Surgery of this College :— Richard Pedler (Tiverton); Irwin, Bridle Street (Belfast); Frederick Harold Vinsen (Grantham.)

MONTHLY STATEMENTS of operations performed at the Dental Hospital of London, Leicester Square, and the Victoria Dental Hospital of Manchester, for September

		London.	Manchester.
Number of Patients attended		—	Adults 518 Children 459
			977
Extractions	Children under 14	612	776
	Adults	1,655	
	Under Nitrous Oxide	974	
	,, Anæsthetics	—	123
Gold Stoppings		201	55
Other ,,		—	159
Plastic		592	—
Irregularities of the Teeth		21	39
Artificial Crowns		8	8
Miscellaneous		320	244
		4,383	1,404

Statements of operations performed at the Birmingham Dental Hospital, for three months ending September, 1891.

	July.	August.	Sept.
EXTRACTIONS:			
,, Under Anæsthetics	407	532	464
,, Without Anæsthetics	434	438	416
Gold Fillings	32	37	54
Amalgam Fillings	101	67	93
Osteo Fillings	72	90	105
Permanent Gutta Percha Fillings	17	26	16
Temporary Gutta Percha Fillings	30	36	49
Dressings (Nerve Canals Treated, &c.,	145	143	172
Sealings	16	17	17
Crowns, Regulations, and attendance on ditto	55	35	60
Advice	203	293	196
Total number of operations	1,512	1,644	1,642
,, ,, ,, patients attending	809	793	854

THE DENTAL RECORD.

VOL. XI. DECEMBER 1st, 1891. No. 12.

Original Communications.

PRESIDENTIAL ADDRESS DELIVERED BEFORE THE ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

BY GEORGE W. WATSON, L.D.S., ED.

GENTLEMEN,—Allow me to thank you for the honour conferred in electing me your President for the ensuing year. It was with some diffidence that I accepted the post; but I trust that I may with the aid of our indefatigable Secretary and the members generally, fill it to your satisfaction; at all events I shall do all that in me lies to carry on the business of the Odonto-Chirurgical Society in an efficient and satisfactory manner, and trust that I may be as successful as our retiring President, Mr. Biggs, has been in conducting the affairs of this society. Societies like this are composed of members who contribute regularly to the Transactions, others occasionally, and some again for various reasons take all and give nothing. This to a certain extent will be what always obtains I am afraid. Nevertheless, we as individual members, should make it our endeavour to help forward in every way the scientific and other work of our society. The day of secret methods and processes in dental surgery is past now, and we should not withhold anything which is for the benefit of the profession and the public good, but ought to do all that is in our power to raise the status of our profession. The idea of some in joining such societies, seems to be to try and make it pay from a business point of view; on the other hand we ought to look at the matter thus: we are placed here to do our duty both to ourselves and our fellows, and very mean-spirited it is if we keep all our knowledge to ourselves and give a helping hand to none. To be a member of a liberal profession we must both give as well as receive. Another point is, we, as members of the Odonto-Chirurgical Society, should aim in our communications to give only deductions which will bear scientific investigation; there is far too much of the *ipse dixit* exhibited, without any proper ground to come and go upon, in our societies. If we would only bear in mind that classical address of our former President, Dr. Smith, on "Scientific Inquiry," we would not be so liable to fall into this error. One great causation in the production of loose statement and bad pathology, &c., is the deplorable ignorance displayed by a large section of the members of our profession of the science of histology and the use of the microscope ; having to accept their pathology and physiology from other sources, instead of being able to investigate for themselves ; they are sure to fall into error. If we wish, gentlemen, to hold our own as a profession—if we desire to gain the respect of our medical *confrères* and the public at large, we must educate ourselves in such matters, and be able to show that we have the ability both to diagnose and investigate in the most scientific manner, both physiological and pathological conditions, when called upon to do so. We should all, I am sure, like to see a fund formed for the endowment of scientific research in dental surgery, established on the lines of the British Medical Association Research Fund, so as to enable any young man of ability to investigate some of those obscure points in oral bacteriology, physiology or pathology, and trust that the day is not far distant when such may be started. There have been very great changes for the better in various directions since I began my career as a dental student, and quite a revolution in the pathology of dental disease, which the study of bacteriology has produced ; and as the *rôle* which microbes play in suppuration and other pathological processes does not seem to be appreciated and understood, as it ought to be, I thought it would not be unprofitable were I to say a few words on the subject. The importance of a knowledge of bacteriology to us as dental surgeons cannot be too strongly impressed on you, when we take into consideration that nearly all the pathological processes taking place in the oral cavity are produced by microbes, or their products. The oral cavity, as you know, is the store-house and incubator for numberless organisms, pathogenic and non-pathogenic, and it is only within recent years that the subject of auto infection from this source has been taken into consideration. In my paper, "On the Organisms of the Mouth," which I gave before the society some three years ago, mention was made of the fact that tubercular and other infectious diseases might have their origin in the mouth, the microbes gaining admission to the system through diseased teeth, wounds, or ulcerations of the mucous membrane. Ample confirmation of this will be found in the recent admirable paper by Professor Miller, "The Mouth, as a source of infection," wherein he gives a formidable list of diseases due to microbic infection from the mouth ; also a most interesting case detailed in the October number of the *British Dental Association's Journal* of tubercular ulceration and caries of the palate, the affection having originated from the presence of diseased teeth in the anterior part of the mouth. I should like to say a few words now in regard to the microbic origin of suppuration. The wonderful results following on the antiseptic treatment of wounds led up to the belief that all wound infective diseases were caused by living microbes, especially when Koch, in 1879, pointed out the direct connection existing between certain traumatic infective diseases in animals, and the never absent definite micro-organisms. Klebs, in 1865, described certain round bodies, cocci, found in pus, which he suggested were the origin of infection. In 1881, Ogston, after examining the pus from 69 abscesses, found in 17 of them a chain coccus, streptococcus, in 31 cocci, arranged like bunches of grapes, staphylococcus ; he also found that those two forms of microbes differed in their action on the tissues, the streptococcus following the lympathic channels was seen to be the cause of diffuse suppurative processes, while the staphylococcus was found only in circumscribed abscesses. Rossenbach and Passet next, by culture experiments, demonstrated the different varieties and peculiarities of growth of the pyogenic group of bacteria. Various authors have asserted, and a pretty common belief is still held that suppuration can be produced by chemical or mechanical irritants, but the recent investigations of Watson Cheyne, Zuckerman, &c., negative this. The general conclusions arrived at by them are (other authors differing) :—

1. No aseptic substances, or chemical irritants, ever cause suppuration.

2. Suppuration following any of these causes is consequent on the admission of microbes into the wound.

3. Chemically pure substances, even some antiseptics may contain micro-organisms.

4. The microbes which more particularly have to do with suppuration are staphylococcus pyogenes, aureus albus, and citreus, streptococcus pyogenes, and in foul abscesses, bacillus pyogenes fœtidus.

5. Inoculations with staphylococcus and streptococcus injected in large quantities have produced local suppuration and death by general infection.

6. In consequence of the frequency of suppuration pus, microbes must have a wide diffusion through nature.

7. Microbes can enter the organism through the respiratory passages, the intestinal canal, or skin.

8. The staphylococcus and streptococcus are found most frequently in pus. Recent investigations have demonstrated the almost invariable presence in the mouth of pyogenic organisms.

As regards the effect microbic products, ptomaines, have in the process of suppuration, Scheuerlen was the first to study their local effects. He introduced into the subcutaneous tissue of rabbits aseptic glass capsules containing sterilized putrid infusion of meat, after the wound was healed, both ends of the capsule were broken off subcutaneously so as to bring the fluid it contained in contact with the tissues ; three to six weeks after implantation the parts were incised and examined. The ends of the capsules were always found to contain a few drops of pus, the surrounding tissues not being affected. Further experiments showed that ptomaines exert a chemical influence on leucocytes and embryonal tissue, transforming these tissues into pus corpuscles, the suppuration thus produced, however, never extending beyond the tissues brought in contact with it. A word now in regard to gangrene septicæmia and pyæmia. Gangrene resulting from mycosis of the tissues is produced by one of three conditions.

1st. There may be plugging of capillary vessels with micro-organisms, interfering with the blood supply.

2nd. Ptomaines by direct chemical action may destroy the tissues and cells of part.

3rd. The intense inflammation resulting from the microbic infection produces an accumulation of inflammatory products, which interferes with the circulation. Septicæmia : This condition is not quite understood. True sepsis is looked upon as a general infection from some local source unattended by any gross pathological changes. Numerous organisms are always present, some of which are supposed to be the specific cause of the disease. Pyæmia : This is a condition which has frequently resulted from the presence in the mouth of abscessed teeth. One of my first contributions to the transactions of this society was : "Notes on a Fatal Case of Pyæmia," its origin being an abscessed inferior third molar. Pyæmia depends upon an extension of a suppurative process from the primary seat of infection to, and suppuration in, distant organs, by the transportation of emboli infected with pus organisms, through the systemic circulation. The wonder is that we do not more frequently have cases of pyæmia of dental origin, when we take into consideration the horribly filthy and diseased mouths we so frequently come across, which cases we should remember are equally dangerous to handle operatively. I need not mention any more of the numerous diseases resulting from microbic infection, but would just like to say a word in regard to that wonderful process phagocystosis, set by nature to remove and destroy micro-organisms. Large numbers of microbes are destroyed in the stomach, others again on entering the circulation are destroyed by the serum or are attacked by the leucocytes or other cells, which surround and take them into their interior, and thus render them irnocuous. There is great antagonism existing between the different organisms, which condition is taken advantage of nowadays in the cure of disease. The organism of erysipelas for instance counteracting and destroying that of anthrax. Great discussions have been going on recently in medical journals, &c., as to the microbic origin of tumours, but all properly conducted experiments hitherto made have resulted in failure to produce a growth of any organism from such a source, and the probability is they never will.

The question of interest to us as dental surgeons is, what prophylactic measures can we adopt to keep down or modify the virulency of the organisms of the mouth. The able researches of Professor Miller on antiseptics have demonstrated that the very best results can be got from the use of antiseptic mouth washes and tooth powders, which seem to modify the virulency of the oral organisms, and thus retard or prevent dental caries or other pathological conditions from being established. I am convinced that the use of antiseptics in the mouth is most valuable, and believe that the more effectually this is carried out, the less susceptible will the patient be to infectious disease. I was very much amused some time ago, at the apt simile used by a certain medical gentleman in regard to cleansing of the teeth. He examines all the mouths of new recruits for one of the public services. When he sees a mouth kept in a dirty condition, he asks the man if his wife does not wash her knives, spoons and dishes, to which he naturally replies, yes sir. Why then my good man don't you keep clean the organs God has given you, and which it is a shame to keep in such a filthy condition, answers Dr.——.

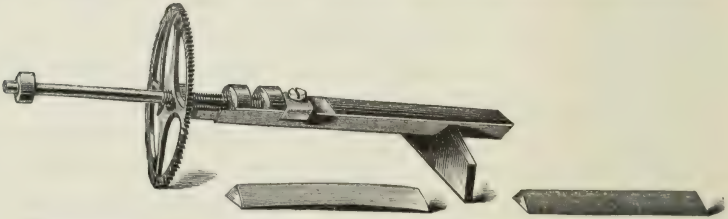
In conclusion, allow me gentlemen to say a word in regard to hypnotism, the latest craze, which some of the members of our profession are practising for the removal of pain in tooth extraction, &c.

Some twenty years ago, when a student under Dr. Orphoot, I made some experiments in hypnotism, or what was called in those days electro-biology, and came to the conclusion that for dental purposes it was of little or no use, owing to the limited numbers that can be affected by it, besides constituting a grave public danger, as it does, on account of the power the operator has over his subject. And in view of the recent developments of hypnotism, I still hold this opinion. Even although the use of this power were confined to professional men, no penal enactments would prevent its use by unscrupulous persons, so the less we have to do with it the better.

EXPERIMENTS UPON AMALGAM.

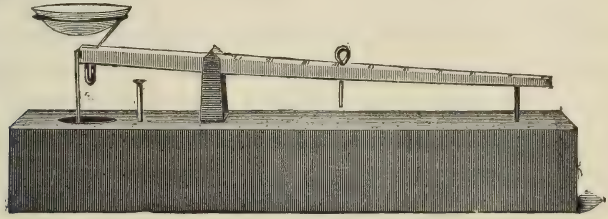
By Amos Kirby, L.D.S.

Some bars of amalgam were examined which had been formed in a small trough provided with a micrometer at one end, and made with a view to testing whether any expansion or contraction took place, during or after the hardening of those substances. When it was first attempted to use this apparatus, the trough was filled with amalgam in the method that would ordinarily be used in filling a tooth, but soon after it had set, it was noticed that the ends of the bar had turned up, so much that no measurement could be taken. Finally the bending became so great, as to make it evident that if such an action generally took place, it was quite sufficient to account for the frequent failure in stoppings made from similar materials.



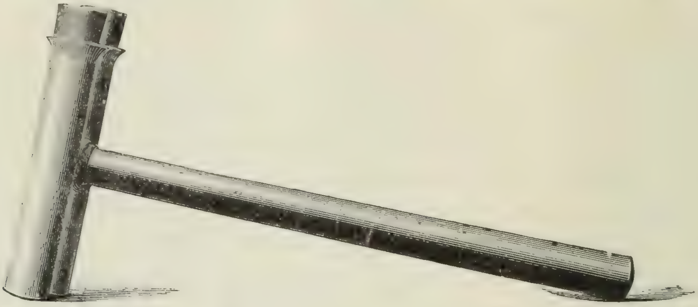
The accompanying wood cut shews the apparatus and two of the amalgam bars ; one of them is a good illustration of the worst form of bending, which takes place in every kind of amalgam and is not peculiar to any special kind. Various plans were tried to remedy the defect, one which seems most hopeful, was the method of using the amalgam in the dryest possible condition, but this increased the evil in a marked degree. After a number of experiments it was found to be possible to prevent the bending entirely by filling the lower half or two-thirds of the trough with very soft amalgam, and the upper part with an amalgam containing so little mercury as to be in a dry and powdery condition, and this was the only way in which it could be accomplished.

Experiments were made at the same time with glass tubes representing moderate sized tooth cavities ; some of these were filled with amalgams in the usual way of making stoppings, after a few days, as might be expected, the substance shrank very considerably away from the glass above the orifices of the tubes. If, however, the tubes were half filled with soft amalgam, containing nearly as much of mercury by weight as of filings, and the remaining part was filled with a mixture containing at least twice as much filings as mercury, then the result was a plug which retained its adaptation to the mouth of the cavity in a perfectly satisfactory manner. When trying to carry out this method in ordinary practice, it was found very inconvenient to do the necessary weighing with ordinary scales, so a balance was specially made which was capable of turning with a small fraction of a grain, a modification of this is shewn in the adjoining wood cut.



A little difficulty then presented itself in the absence of a mercury-holder, from which the necessarily small quantity of mercury could be got out, because a very small quantity too much of this material was found to spoil the mixture. An elastic holder was therefore contrived with a regulating plug in the nozzle, from which a very minute stream can be squeezed into the scale cup.

As some little time was wasted in mixing the necessary separate batches of material, two unbreakable tubes were fixed on the end of a handle as shewn below, and by their assistance the mixing could be rapidly and perfectly done with a very small motion of the wrist.



ANTISEPTICS AND DISINFECTANTS USED IN DENTAL SURGERY.*

By Savill H. Hayward.

Mr. President and Gentlemen,

I cannot pretend that in the paper I have the honour of reading to-night I shall be able to put before you anything of an original nature, but if I can give a brief description of the physical characteristics, composition, properties, and uses of some of the antiseptics and disinfectants used in dental surgery, with a few suggestions as to the best means of exhibiting them, it may perhaps serve a useful purpose. I was encouraged to write this paper by the assurance that the paper itself was of secondary importance, provided it gave rise to a good discussion, an end I think guaranteed almost by the nature of its subject, since it is one which can hardly fail at all times to be of the greatest possible interest to the dental surgeon and the dental student, the more so since each year greater light is being thrown on the subject of micro-organisms, and our scientific men are confirming and elucidating the germ theory of disease, pressing home upon the surgeon the conviction that success in his operations very largely depends upon the clearness with which he realizes the necessity of his surgery being of a thoroughly antiseptic nature.

It is not possible to draw a line of demarcation between the two classes of antizymotics, viz., antiseptics and disinfectants, the same substance frequently possessing properties entitling it to a place in both. I shall not, therefore, speak of them as separate classes, and though the following may be far from a perfect, yet it may be I think, a convenient method of arrangement in which to discuss them. (I.) Those which owe, and (II.) those which do not owe their antiseptic and disinfecting powers to certain contained gases, in solution or combination, which they evolve under ordinary or special conditions; and (III.) it will perhaps be convenient to describe separately the essential oils.

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* A Paper read before the Students' Society, Dental Hospital of London.

In the first division we shall find peroxide of hydrogen, ozonic ether, permanganate of potash, sulphurous acid, and the preparations of chlorine e.g.: liq. sodii chlorinata, and liq. chlori.

Peroxide of Hydrogen or Hydroxyl in aqueous solution is a clear, inodorous, watery liquid, prepared by adding hydrated peroxide of barium to dilute sulphuric acid, removing the precipitate, neutralizing with baryta water and again filtering; the solution of hydroxyl thus obtained is nearly pure. For medical purposes the solution is made of 10 volume strength, *i.e.*, when decomposed 1 c. c. will yield 10 c. c. of free oxygen, but it can also be obtained of 12 and 20 volume strength. It has a harsh, somewhat bitter taste, and is possessed of very considerable oxidising powers; and has a well-marked action on bacteria, a solution of 1:8000 preventing their developement (Miller). The second atom of oxygen in its composition is very loosely combined, and is quickly liberated in the active state when brought into contact with certain organic matters, or any animal substance undergoing putrefaction; on this account it is very valuable in the treatment of pulpless teeth for the syringing out of the pulp chambers and root canals, and as an injection for alveolar abscess, the peroxide continuing to froth briskly by the escape of gas as long as any unoxidised putrefactive material is left. Two cases are recorded in the *Lancet*, of 1889, of necrosis of the jaws, in which, after removal of a sequestum the discharge of pus from the retained parts was stopped, and the parts healed rapidly under the use of injections of peroxide, and the same surgeon has recorded his successful treatment by the same method of a case of pyorrhœa alveolaris. The same line of treatment in pyorrhœa has also been followed in America with very good results by Drs. Aingle and Martindale. It has the drawback of being a very unstable compound, and should be used as fresh as possible and preserved in closely stoppered blue bottles protected from light and heat, by both of which its decomposition is effected.

Equally efficacious with the above and with the advantage of being very stable is ozonic ether, *i.e.*, ether containing H_2O_2, in 30 vol. strength, with some alcohol. It is miscible with water, and in addition to its antiseptic properties is said to have a stimulating effect upon ulcerated surfaces. Since by the liberation of one atom of oxygen, peroxide of hydrogen is reduced to water, it is evidently quite useless as a permanent or temporary dressing, and as a sterilizer of carious dentine, Miller has proved its uselessness from the same causes, except when the amount of dentine to be acted on is very minute. As a devitalizer of the bacteria of the mouth he found the 10% solution to be equivalent to a solution of carbolic acid 1:100, sterilizing the liquid containing the micro-organisms in from ten to fifteen minutes

Permanganate of Potash, obtained by the action of boiling water upon manganate of potash occurs as slender acicular crystals of a deep purple colour, freely soluble in water. It's solution has no disagreeable odour, and by the ease with which it parts with oxygen the permanganic radicle being reduced to the black oxide, it is enabled to destroy the organisms producing sepsis or fermentation, or forms chemical compounds incapable of decomposition with the materials on which they flourish, and by oxidising the products of decomposition already formed so alters their chemical properties as to deodorize them. A solution of the strength of 1:1000 prevents the development of bacteria, though a much higher concentration is necessary to destroy the vitality of the spores. Its use is indicated in the treatment of pulpless teeth and abscesses, and as a mouth lotion in cases where the oral secretions are offensive, or there is purulent discharge in alveolar periostitis, salivation, etc.

The official solution, the liq. potassii permanganas, is of 1% strength, this diluted till it is about 1:1000 makes a solution suitable for syringing root canals, mouth lotions, etc.; for the *dressing* of root canals a much greater strength should be used, 1:200 or 250. Although less generally in use, the permanganate of calcium is preferable to the potash salt since it has not the extremely disagreeable taste of the latter.

Chlorine in the form of an aqueous solution, either of the gas itself or of one of the compounds in which it is in a loose state of combination, furnishes us with a most powerful disinfectant. Its action in this direction would appear to depend upon its great affinity for hydrogen and its consequent power of decomposing organic particles, nascent oxygen being set free and the chlorine further combining with the resulting broken down molecule. As a disinfectant it is greatly superior to carbolic acid, but has but little effect on bacteria. It is extremely useful in either of the forms mentioned as a mouth lotion in correcting the fœtor arising from an unhealthy condition of the mucous membrane, in mercurial salivation, cancrum oris, etc. The two official solutions used are the liq. chlori, a simple solution of rather less than 1 % of the gas in water, and the liq. sodæ chlorinatæ, which is a mixture of hypochlorite of soda, chloride of sodium, and carbonate of soda in solution, and having 2·5 % of available chlorine. The liq. sodæ chlorinatæ is a more stable preparation than the liq. chlori, and, since chlorine in the presence of water decomposes the latter with formation of hydrochloric acid; if liq. chlori is prescribed, it should be ordered to be freshly prepared. Both of these solutions when used should be largely diluted with water in the proportions of 1:12 or 1:16.

Sulphurous acid consisting of a solution of sulphurous acid gas in water possesses the properties both of a disinfectant and antiseptic. Freshly prepared by heating sulphuric acid with charcoal and dissolving the gas in water, it is a colourless liquid containing 5 % by weight of sulphurous acid gas SO_3; having a great affinity for oxygen it readily decomposes organic bodies, and thus destroys low forms of living matter, arresting fermentation, and preventing the development of bacteria. As a devitalizer of bacteria, in experiments performed by N. de la Croix and confirmed by Koch, a high place was given it, a solution of 1:2000 being recorded as sufficient to kill them, while a concentration of 1:330 prevented the reproduction of their spores; on the other hand, germs have been found alive in a tube of bouillon impregnated with the gas after a lapse of fifteen days, the liquid having a strongly acid re-action. Its use in dental surgery is indicated in the cases of thrush or stomatitis, when it may be prescribed in the form of a lotion of one part to two or more of water, combined with a little glycerine, or as a spray, which is a convenient method of application in ulcerative stomatitis. It may also be prescribed in the form of one of the alkaline sulphites or hyposulphites 3 gs. to ʒj of water. The sodii hyposulphis is specially indicated where the oral fluids are of an acid reaction, as in them it is decomposed, free sulphurous acid being evolved. As with peroxide of hydrogen and the preparations of chlorine, it is imperative that sulphurous acid and solutions of the hyposulphites should be used in a fresh state, since by the absorption of oxygen sulphuric acid is gradually formed.

In the second division of my subject it will be well, perhaps, to group together the coal tar derivatives and the iodine compounds, and to speak of these first. Among the former we shall find of chief importance carbolic and salicylic acids and resorcin.

Pure carbolic acid, phenol, or phenilic acid $C_6 H_5 OH$ is an alcohol obtained by fractional distillation from that part of coal tar, boiling between 180 deg. and 190 deg. C. Purified, it appears as a colourless crystalline body, but slightly soluble in water (1 in 14), but readily so in rectified spirit of wine, ether, glycerine, fixed and volatile oils, and becoming permanently liquified by the addition of ten per cent. of water. Among antiseptics it is perhaps the most widely used, being a most powerful germicide and disinfectant, a a solution of 1:500 prevents the development of bacteria of the human mouth, and of 1:200 prevents the development of spores, and of 1:20 completely destroys them. Unlike chlorine, it is not a chemical disinfectant having no power of combining with and destroying mephitic gases. In its power of penetrating and sterilizing carious dentine, it is placed by Miller as inferior to bichloride of mercury and trichloride of iodine, and the results of his experiments in this direction, would seem to show that the acid requires to be much longer applied to the cavity to be disinfected than is usually the case, and that the mere swabbing out of the excavation previous to filling, is practically useless. The undiluted acid is strongly escharotic, coagulating albumen, and therefore contra-indicated as an antiseptic application to exposed pulps in the process of "capping," and should not even be used in a cavity where but a thin layer of dentine is left covering the pulp, or used as a dressing in the concentrated form where it is likely to come in contact with albuminous liquids. A theory started by Dr. Harlan, of the United States, seems to have gained ground in that country to the effect that its use is inadmissable in the treatment of root canals and pulpless teeth, since it coagulates the organic contents and does not penetrate the dentinal tubules, this statement hardly tallies with the result of Miller's experiments given above, and the objection seems to border on the fanciful, but its effects, except in a diluted form on albuminous substances, should be borne in mind in the treatment of root canals connected with abscess sacs and which have fine apical foramina, else the latter may become blocked, preventing free drainage.

For permanent antiseptic dressings, it does not by any means form a suitable agent since it is readily absorbed by the tissues, leaving no trace of its presence after the lapse of a few months. When chemically equivalent parts of strong carbolic and sulphuric acids are mixed, aseptol or sozolic acid, a viscous reddish liquid results, neither possessing the odour of phenol nor any corrosive or irritant properties; it was brought into notice by Dr. Huppe on the Continent, whose experiments led him to place it as an antiseptic with phenol and perchloride of mercury. Freely soluble in water a 10 per cent. solution was found to kill the spores of the anthrax bacillus in thirty minutes, a 5 per cent. solution of carbolic acid requiring twenty-four hours to produce the same effect, while a 3 or 5 per cent. solution was found to be a true disinfectant of micro-organisms free from spores; although soluble in alcohol and glycerine, solution in these media showed a non-antiseptic action; a great point in its favour is that it is hardly at all toxic in its nature, and a 10 per cent. solution, even, has no caustic action when applied to the skin. A 3 per cent. solution is recommended in pyorrhœa alveolaris to be injected between the gums and teeth every three days for a fortnight; by this means the flow of pus is said to be arrested, the gingival margin restored, and all tenderness removed. Carbolic acid is freely soluble in the caustic alkaline solutions; a mixture of 8 parts of phenol with 4 of caustic soda and 100 of water forms the liq. sodii carbolatis or phenol sodique, which, properly diluted, makes a most useful application where the combined antiseptic and disinfectant properties of the phenol and the alkaline re-action of the soda are desired. When carbolic acid is used as a mouth wash, it should be prescribed in this form, or with some substance neutralising its causticity, such as glycerine.

Salicylic Acid is naturally present in certain essential oils, but is commercially produced by the action of carbonic acid gas on a mixture of carbolic acid and caustic soda, is possessed of great anti-fermentative and anti-putrefactive properties, experiments carried out by Goddefray showing it to be three times more powerful than carbolic acid as a preventative of fermentation. Both it and its compounds would appear to have a decided action on bacteria, prohibiting the growth of leptothrix, ciliated infusoria, and entirely preventing the development of anthrax bacilli, in a solution of the strength of 1 in 1,500. It possesses the advantage of having no smell, being comparatively harmless if taken internally, and of producing but little local irritation. It is but slightly soluble in cold water—1 in 700 or 800; but a 4 per cent. solution can be obtained by the addition of rather more than an equal quantity of borax; diluted to half this strength it forms a useful antiseptic mouth wash, correcting any fœtor of the breath arising from an unhealthy condition of the mouth. Its solution has a decidedly acid re-action, and its use in the mouth has been objected to by many who are of the opinion that it decalcifies the teeth; Miller says he has seen it used for years without any evil results, and advises its employment in a strength of 1:200 and 1:300, in which case he finds it capable of devitalizing a cultivation of ferment bacteria of the mouth in half-a-minute. Heated with camphor in the proportion of 84 parts to 65, salicylic acid forms on cooling a crystalline mass, salicylate of camphor or salicylated camphor, which, on being rubbed down, becomes of an unctuous consistence; it is found useful as an application in inflammatory conditions of the mucous membrane of the mouth.

Of the three isomeric compounds, derivatives of benzene, resulting from the replacement of two atoms of H by two of O H, viz.: resorcin, hydroquinone and pyrocatechin, all of which possess strong antiseptic properties, resorcin is the only one which has received much attention. It is produced by passing benzene vapour into hot sulphuric acid and heating the product with excess of soda; it occurs in white crystalline plates resembling benzoic acid and is soluble in less than two parts of water, in this strength it has a somewhat caustic action on the skin, but a 5 per cent. solution is not found irritating either to the skin or mucous membrane, and is capable of destroying the vitality of low organisms. It is recommended as an application in the treatment of mucous patches of the cheeks and gums, these being quickly cured by painting a 5 to 10 per cent. solution on the previously dried mucous membrane. As an antiseptic and disinfecting mouth wash, a weaker strength is advisable, a 2 or 3 per cent., otherwise an unpleasant tingling of the lips may be produced. Miller reports the power of resorcin in sterilizing carious cavities as very inferior to that of carbolic acid.

Though possessed of powerful antiseptic properties *iodine* is most generally employed in the form of one of its compounds, iodoform, iodol, aristol, and the trichloride of iodine.

Iodoform or tri-iodomethane, analogous in constitution to chloroform is prepared by the action of iodine on a hot solution of carbonate of sodium in dilute alcohol, and occurs either in a minute crystalline, form or as an impalpable precipitate containing $\frac{29}{30}$ of its weight of iodine, and possessing well marked antiseptic as well as slight sedative powers. It is insoluble in water, but dissolves in the proportion of 1:80 of spirit, 1:10 of ether, 1:12 of chloroform, and 1:14 of oil of eucalyptus. Heat decomposes it, liberating iodine and rancid oil having the same effect, it has been suggested that the good effects obtained when it is applied to an ulcerated surface may be due to decomposition taking place with the evolution of free iodine. Although *destroying* organisms less readily than carbolic acid, according to Miller, it is ten times as powerful in preventing their development, and it would appear to have a much more marked effect than it is as a disinfectant and deodoriser. A remarkable case illustrating this is given in the *Lancet*, of March, 1887, in which it is recorded that a "poisoned hand, riddled with abscesses," although kept in a carbolic bath for four hours, and then syringed and dressed with carbolic solution, 1:40 was in twelve hours as offensive as ever; but dressed with a 20 per cent. ointment of iodoform it was, after the lapse of the same time, perfectly sweet and remained so under that treatment until healed.

Iodoform has proved of value in the treatment of alveolar abscess and the dressing of root canals in a septic condition; for these purposes, Mr. Underwood recommends it to be combined with oil of eucalyptus; he records the successful treatment of several cases of a chronic nature, and says he has been able to retain roots by this means, whose preservation seemed otherwise hopeless. As a temporary dressing for root canals it is, perhaps, best applied in the form of iodoform wool containing 10 per cent. of iodoform (or if a wool more strongly medicated be desired the gossypium iodoformi of the Throat Hospital, containing 50 per cent.), this should be dipped in oil of eucalyptus before introducing into the canal; for permanent dressings the wool may be first dipped in melted iodoform wax or in a saturated solution of iodoform in collodion, 1:10.

Iodoform seems to be particularly fatal to the virus of syphilis, and in form of pastilles, 1 gr. to 18 gr. of glyco-gelatine is found useful in the treatment of syphilitic affections of the mouth and tongue.

When applied externally, as in the treatment of alveolar abscess bursting through the skin, the iodoformi pulvis should be used, as it has less tendency to clot than the precipitated preparation, and its extremely unpleasant and persistent smell should be masked, perfectly covered it cannot be by the admixture of coumaron, 1:50.

On account of its toxic properties and its disagreeable smell, several compounds possessed of like antiseptic properties, but odourless or non-poisonous bodies have been introduced, viz. : iodol, aristol, and sozoidol.

Iodol.—A micro-crystalline brownish powder prepared by precipitating pyrrhol (a derivative of animal oil) with iodo-iodide of potassium contains about $\frac{9}{10}$ths of its weight of iodine. It is not soluble in water but in 34 parts of glycerine in 6 of alcohol, and freely in ether or collodion. It is non-irritant and non-toxic, and has no unpleasant smell. Depending, doubtless, like iodoform, for its antiseptic powers on the iodine in its composition, it can be employed whenever the use of the latter is indicated ; the glycerine solution will be found specially useful for temporary dressings of pulpless teeth in a septic condition, and it has been recommended mixed with twice its weight of oxide of zinc to be made into a paste with vaseline, and used as a permanent filling for pulp chambers.

Aristol was first introduced about the beginning of last year, and has been used in general surgery to a considerable extent on the Continent. It is a reddish brown amorphous powder thrown down as a precipitate on pouring a solution of iodine in iodide of potassium into an alkaline solution of thymol. Its chemical constitution is not quite certain, but it would seem likely that a hydrogen atom of the hydroxyl group in thymol is replaced by iodine, forming an iodoxyl of thymol (C_{10} H_{13} IO). It contains 14·8 per cent. of iodine, and though in this respect vastly inferior to iodoform, it has the great advantages of being very nearly tasteless, and odourless, and non-poisonous, while possessing marked antiseptic and antiparasitic action. It is insoluble in water, alcohol, and glycerine, but freely soluble in ether and the fatty oils. It is decomposed by heat with escape of free iodine, and when applied externally should be preserved from the light which has the same effect upon it. I have found it useful in the treatment of pulpless teeth, carrying it into the pulp canal in the form of powder on a Donaldson bristle, afterwards dressing the tooth with cotton wool dipped in oil of eucalyptus, upon which the aristol is sprinkled

The Sodium Salt of Sozoidal (Di-iodophenol sulphonic acid) does not seem to have been used to any extent in this country, though I believe it has been in America. Its composition would indicate it as likely to be serviceable since the acid radicle contains 54 per cent. of iodine, 7 per cent. of sulphur, and 20 per cent. of phenol. It occurs in odourless shining circular crystals, soluble in 14 parts of water, and so diluted, does not appear to be of an irritating nature.

Trichloride of Iodine has been lately very favorably spoken of by Dr. Miller, who says it was recommended as an antiseptic in 1887, by Riedal and Sangenbach. It is, he says, a brick-red powder with an irritating smell of chlorine, the aqueous solution of which has an acid re-action. It is claimed for it that a 0·1 to 0·5 per cent. solution is equal in antiseptic power to a 0·5 to 1·0 per cent. solution of perchloride of mercury, while as a sterilizer of carious dentine, Miller thinks that a 5 per cent. solution is "one of the most active agents at our demand." A solution of this strength has an exhaustive action, though but slight when compared with pure phenol, and "in aqueous solutions having equal effects on spores of anthrax bacilli, sublimate is 5 to 6 times, and creosote 7 to 8 times, as poisonous as the trichloride of iodine."

Perchloride of Mercury has been regarded, and perhaps very properly, as the king of antiseptics, and would be doubtless still more extensively used than it is were it not for its extremely poisonous properties. According to Koch, a solution of one in a million retarded, and 1:300,000 completely prevented the development of anthrax bacillus, while a strength of 1:100,000, Miller says, is sufficient to prevent the development of mouth bacteria, and 1:1,000 destroys their spores, provided the latter are exposed to its action for a sufficient length of time. When a solution of sublimate is brought in contact with albuminous bodies, a heavy precipitate of albuminate of mercury is found which is not antiseptic, and in which organisms can grow and thrive. Professor Laplace, working in Koch's laboratory, discovered that if the solution be acidulated with HCl or tartaric acid there was no precipitate, while the perchloride suffered no diminution, but rather gained in antiseptic power. He recommends 1 part of mercury with 5 parts of tartaric acid to 1,000 parts of water. This result is, I should think, owing to the formation in the presence of albuminous substances, of a soluble acid albumen, since the solution responds to the chemical tests for $HgCl_2$, but it may be due to the known power of tartaric acid in preventing precipitates under certain conditions. For sterilizing carious cavities, Miller gives corrosive sublimate a very high place, but second to terchloride of iodine, and he recommends a 5 per cent. solution for this purpose; the best and most convenient vehicle being, I think, glycerine, in which it is soluble in the proportion of 2:3 by weight;

he recommends its solution of 1:2,000, especially if combined with other antiseptics and disinfectants as an excellent antiseptic mouth, wash, but its unpleasant taste and the peculiar susceptability of some persons to its action would greatly control its use, except as an occasional remedy. Quoting Weitzel, he says the latter is enthusiastic in his praises of sublimate in the treatment of septic and putrid conditions of the mouth, and that he found "syringing the alveoli with a solution of 1:1,000 followed by the injection of 6 to 8 drops of a 2 per cent. solution in the septic parts, a most sovereign remedy in cases of septic alveolitis."

Chloride of zinc results from the direct action of HCl on the metal as a white, very deliquescent caustic substance, having strong and peculiar powers as an antiseptic, disinfectant, and deodorizer. It is freely soluble in water, alcohol, and ether. As a preventor of the development of bacteria it is only half the strength of carbolic acid, but it has this remarkable effect, that if its solution is painted on the surface of a wound, the tissues of the latter are rendered incapable of putrefaction for a considerable time, two or three days, notwithstanding exposure to septic influences. It has, consequently, been recommended as an antiseptic application after operations in the mouth for tumours and affections of the tongue. A 5 per cent. solution is very useful as a deodorising and cleansing mouth wash in cases of purulent, fœtid discharge within the oral cavity, and for injecting into the sinuses connected with necrosed bone; while a solution of a weaker strength may be injected with advantage in cases of empyema of the antrum. It not infrequently occurs that the anterior root canals of lower molars are exceedingly small and tortuous in their course, so that it may be extremely difficult, if not impossible, to entirely remove every part of the necrosed pulp. Under such circumstances, after the removal of as much as possible, the application of deliquesced zinc chloride, by means of a Donaldson's bristle, seems to give good results. It would seem in saturated solution to be about equal in strength with carbolic acid in sterilizing carious dentine, but its extreme escharotic action, which on account of its great power of penetrating tissue, would be dangerous if used in close proximity to a living pulp, and the great pain sometimes caused by its application almost preclude its use in this connection.

Boracic or *boric acid*, first introduced in Sweden as a preserver or food, has taken a prominent place as an antiseptic and disinfectant in surgery. It occurs in the form of white odourless crystals, having an unctuous feeling to the touch, and is usually obtained by the action of sulphuric acid on borax. A solution of 1:800 is stated by Koch to prevent the development of anthrax bacilli, while a strength of 1:130 is found to prevent the development of bacteria in general; though for complete sterilization of a liquid containing a ferment bacterium of the mouth, Miller found a concentration of 1:50 necessary for a period of more than fifteen minutes. It is soluble in 26 parts of water and 5 of glycerine. When 92 parts of the latter are heated with 42 parts of boric acid, a tough deliquescent mass, freely soluble in water and alcohol, is produced. Boroglyceride, which in solution of 5 or 10 per cent. strength, form a valuable application as injections or mouth washes, where a non-stimulating antiseptic is required.

Closely allied to the coal tar derivatives is *Creosote*, a product of the distillation of wood tar, the antizymotic powers of which are very similar to those of carbolic acid, destroying low vegetable organisms and the fermentation they cause. Unlike it, however, though soluble in alcohol, ether and oils, it is insoluble in glycerine, and only in 1,000 parts of water; in this latter strength it was found by Bucholtz to destroy bacteria. Its use, like that of carbolic acid, is controlled by its power of coagulating albumen, and further by its extremely unpleasant biting taste, and the salivation it produces.

Among the Essential Oils, it will, I think, only be necessary to speak of those of cinnamon, cloves, peppermint, eucalyptus, thyme and wintergreen. These all possess the power, on exposure, of absorbing oxygen, having an ozonizing influence on the surrounding atmosphere, and their antiseptic powers are increased by the amount of oxygen absorbed. In common with other essential oils, they consist of a mixture of liquid hydrocarbons, elæoptins, and oxidized hydrocarbons, stearoptins, the latter being either in the form of a solid camphor like body crystallizing out from the oil; or, being in the liquid form, are of a higher specific gravity than the elæoptins, and only distil over at a higher temperature than them. It will hardly be necessary to discuss at length the oils of wintergreen, cinnamon, cloves and peppermint. *Oil of cloves*, which Koch found to *retard* the development of anthrax bacilli in a strength of 1:5000, probably owes its slight antiseptic powers to a salicylic compound it contains. *Oil of wintergreen* consists almost entirely of salicylate of methyl, and has a mild antiseptic action devitalizing ferment bacteria of the mouth, in a concentration of 1:300, in rather over fifteen minutes; these are both inferior in strength to the oil of peppermint, which Miller states he has found possessed of considerable action, a solution of 1:300 being capable of sterilizing a liquid containing a culture of a ferment bacterium of the mouth in from five to ten minutes.

Oil of Eucalyptus, obtained from the leaves of the blue gum tree, indigenous in Australia, has a very extensive use in antiseptic surgery. It consists of a mixture of a simple hydrocarbon and an oxidized product, the quality of the latter and its antiseptic activity increasing with age; the more volatile portion of the oil, consisting of the unoxidized hydrocarbon, is a mixture of terpene and cymene. Oil of eucalyptus in a dilution of 1:116 kills developed bacteria, prevents their development in 1:600, and the development of their spores in a strength of 1:300. Mr. Underwood recommends it strongly in the form of an injection in cases of alveolar abscess of a chronic form, and its persistence and diffusibility render it very useful in the treatment of pulpless teeth. Together with the other essential oils, Miller regards it as, but a very poor agent in the sterilization of carious dentine; but I think his experiments in this direction are hardly conclusive since he ascribes their poor action to their insolubility in the juices of the dentine, and it should be a rule in treating dentine with essential oils to first dehydrate it with ethylic alcohol, dissipating the spirit, if the tooth be not too sensitive with the hot air syringe.

Thymol.—A stearoptine contained in oil of thyme, appears as large transparent rhomboidal crystals, having an aromatic taste, a thyme like odour, and having a caustic action on the skin. It is soluble in 800 parts of water, in 200 of glycerine, and freely in alcohol, ether and caustic alkaline solutions. It is a powerful antiseptic, 1:1000 arresting fermentation, and 1:1500 rendering sterile a liquid containing a cultivation of a ferment bacterium of the mouth. Rubbed with equal parts of camphor, or phenol, an oily liquid results, convenient as an application on cotton wool in the treatment of pulpless teeth or teeth with necrosed pulps; and thymol itself in small pieces forms a very good application to leave in the pulp chamber of a tooth upon which it is deemed advisable to perform rhizodontrophy.

I have to thank you, Mr. President and gentlemen, for your kind attention to my paper, on a subject which I regret I have found myself only able to treat in so tame and unworthy a manner, but I trust that it may be of some service, if only by its faults, in starting a discussion that may be both interesting and useful.

A WORD TO STUDENTS ON THE IMPORTANCE OF MECHANICAL DENTISTRY.

By Guy Harper, L.D.S.

Looking back on the examinations of past years one cannot help noticing the greater range of subjects that are nowadays required to satisfy the examiners for the L.D.S., Eng., diploma. Indeed, it is only of late years that the question of mechanical dentistry has found its way into the papers in any serious form, and this is the more to be wondered, as, seeing what splendid mechanics some of the older dentists were ; but no, for some reason or other this matter was almost totally ignored, at any rate in the practical part of the examination ; lately, however, it has been considered of so much importance that the hospitals have been obliged to provide laboratories where the students may acquire the degree of excellence necessary to pass their examination. Now this brings us to the all-important question of pupildom ; one may say that there are three classes of pupils, one, and let us hope the largest, that *will* work, another who think that the only way to acquire a competent knowledge of mechanical dentistry is by manufacturing articles of *vertu* for his lady friends, and lastly the pupil who takes unto himself the manner of a chrysalis only to singe his wings when he has developed into the full bloom of a medical student. Three years is none too long to master all the minutiæ of our work, even though constant attention be paid throughout the whole of that period. For the time being let us consider dentistry as a trade ; in other trades pupils do not start on their own account directly they are out of their articles, whereas a dentist, as often as not does, for after all the hospital is only another period of apprenticeship, sometimes even we find the two periods run into one, the hospital and the workroom attended at one and the same time. Surely, we, who are supposed to be masters of practically a trade and a profession, have more knowledge and a greater delicacy of touch to acquire than a smith or a carpenter. Ask one of these "of what use is an apprentice at the end of four years," and when you hear his reply think that some dentists are considered competent to practice after four and only four years of |study. It is an established fact that many men are apt—too apt to consider the mechanical side of our work as beneath their dignity, and that operative work possesses charms that the workroom does not ; still, for all that, dentists and embryo dentists should bear in mind that the term dentistry includes both branches of the work, and that both the operator and mechanic have equal rights to the name. Certainly much of your future success will depend on the careful study of laboratory matters ; it trains the hand as nothing else can. A good mechanic will be found, generally speaking, to be a good operator, and the British public are better judges of mechanical than operative work. During the years of their apprenticeship, pupils should remember that it does not fall to everyone's lot to practice in London, and that many are forced by circumstances, over which they have no control, to practice in the country where no work is done for the profession. Then vain regrets for lost time and opportunities take the place of the much wanted gold stoppings that once were considered the sum total of a dental education.

The technical part of an industrial pursuit can be *learned*, principles alone can be *taught*. To learn the trade of husbandry, the agriculturist must serve an apprenticeship to it ; to inform his mind in the principles of science he must frequent a school specially devoted to this subject. It is impossible to combine the two, they must be taken up successively, and careful study devoted to each.

PENTAL ($C_5 H_{10}$) AS AN ANÆSTHETIC.*

By Prof. Ludwig Hollaender, Halle-on-the-Salle.

It is well known that all general anæsthetics which produce unconsciousness have been used first by dentists, or else for the purpose of extracting teeth. This has been the case with the oldest anæsthetic—nitrous oxide gas—as well as with the more recent ones, ether, chloroform, methylene, chloride of ethyl and hydrobromic ether. This fact is all the more remarkable as the narcosis is never fully developed owing to the interruption during operation. Nor must the greater danger, by reason of the patient being kept in a sitting position, be forgotten. An explanation of this circumstance may be perhaps found in the great number of dental patients always at hand, and in the ready conclusion that, if unconsciousness lasts during such an exceedingly painful operation as the extraction of a tooth, the same anæsthetic will answer for any other operation as well. In the same way amylene ("Pental") also has first been used for extracting teeth. Cahours was the first to produce it from amylic alcohol and Balard described it in 1844. Snow used it first during dental operations (*Lancet*, 1856, No. 26), and in 1857 it was a favorite anæsthetic for minor operations. Its principal advocates were Spiegelberg and Lohmeyer (*Deutsche Klinik*, 1857, No. 20), Tourdes (*Gazette de Strassbourg*, 1857, No. 28), Egger and Petri (*Wiener medic Wochenschrift*, 1857, No. 28), and Robert (*Bulletin de Therapeutique*, 1857, No. 52). Whilst Tourdes described experiments mainly on animals, Robert gave his experience with the human body, and at the same time compared the effects of amylene with those of chloroform and ether. Although it is not quite clear which of the several preparations he used, his experiences coincide with my own, viz., partial retention of consciousness during complete extinction of feeling and partial or complete annihilation of the action of the will. Cessation of sensibility with full retention of consciousness has never been observed.

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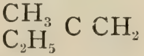
* A lecture delivered in Halle-on-the-Salle, at the 64th Meeting of the Society of German Naturalists and Physicians, in September, 1891.

All these reports are from the years 1856 and 1857, and since 1858 nothing further has been heard of amylene. Only Pfeffermann mentions it in his work *Fassliche Darstellung der gesammten Zahnheilkunde*, published 1862, but although he pretends to have used this anæsthetic hundreds and thousands of times, he merely gives exceptions from the above authors. As nothing about amylene is found in any scientific paper after 1858, we may take it for granted that its use had been generally discontinued owing to deficient preparations.

Formerly amylene was made from amylic alcohol (fusel-oil) by treatment with some hygroscopic substance, such as chloride of zinc or anhydrous phosphoric acid, etc., the result being the formation of different preparations, containing mixtures of different substances adulterated with amylic alcohol. All these preparations produce dangerous, choking vapours; their boiling point varies from 28-75° C., and their smell is very offensive.

The principal preparations were :—

(1) Trimethylaethylene (Pental), also called :			
B. Isomylene $(CH_3)_2$ C CH_3	boiling	point	38° C.
(2) A. Amylene (Propylaethylene) $C_3\ H_7$, CH, CH_2	,,	,,	37° ,,
(3) J. Amylene  $\substack{CH_3 \\ C_2H_5}$ C CH_2	,,	,,	31° ,,
(4) Pentan $C_5\ H_{12}$	,,	,,	29° ,,
(5) Polymere Amylenes, f.i. Diamylene	,,	,,	156° ,,

The present amylene (sold under the name of pental) is made in the chemical works of Mr. C. A. F. Kahlleaum, in Berlin, at the request of Professor von Mering, not from amylic alcohol, but from amylic hydrate heated with acids. Thus a perfectly pure third grade amylene is produced with a fixed boiling point of 38° C. It is a colourless fluid of little specific weight (16 cubic centimetres weigh about 10·0), it burns with a clear flame and can be inhaled without irritating the membrane of the mouth, larynx or trachea.

Insoluble in water it mixes in any proportion with alcohol, chloroform or ether, it is as inflammable as the latter, and must therefore not be brought close to fire. But as sunlight and air have no decomposing effects upon it, it need not be kept in dark bottles nor protected from air.

Extremely volatile it freezes readily on the inhaler, just as hydrobromic ether does, and with an ordinary wire inhaler it takes from 50 to 90 seconds before narcosis sets in. But even in this time the corneal reflection does not quite disappear, and with some patients (they may inhale with their eyes open or closed), the pupils may be either dilated or contracted. Composed persons, who inhale regularly are more quickly narcotized, than are the excitable or anæmic just as is the case with all other anæsthetics. The appearance of the patients is sometimes very peculiar ; they often keep their eyes wide open, and even if they are told to close them when commencing to inhale, or to keep the eyelids down with their fingers, the eyes will open in spite of all.

The narcosis sets in quite gradually, and without any special symptoms. The pulse is at first a little quickened but soon returns to its normal state. In most cases consciousness and volition are still partially retained, when feeling is already extinct. So patients in deep narcosis open their mouths when told to do so, even if the jaws were tightly locked before. But although they stare at the operator with widely open eyes, they know absolutely nothing of what is going on, and even on resuming their senses, they remain dazed to such an extent that operation may be continued with impunity.

I never observed contraction of muscles as with hydrobromic ether, and only one case of deep cyanosis, which occurred in a female nine months *enciente* who had not properly loosened her clothing.

The awakening is not sudden, as with hydrobromic ether, but quite gradual.

There is no vomiting or headache either during or after the narcosis, on the contrary, the freedom from sickness of the greater number of patients after coming to is quite astonishing, and very often a bad headache which made patients feel uneasy and almost caused them to refuse the use of an anæsthetic, has entirely disappeared after consciousness became restored. I never observed contraction of the chest or fainting fits as with chloroform or hydrobromic ether, and I have used pental with equally good results upon children from 4 to 10, and elderly people from 50 to 60 years of age.

Even slight excitement occurs very seldom, and then differs favorably from that produced by chloroform or hydrobromic ethers as it invariably produces agreeable sensations only. Some patient, actually commence laughing, so that "laughing ether" would almost seem to be an appropriate name for pental.

Although, contrary to what occurs with hydrobromic ether, the narcosis with pental can be prolonged at will, this would be rather difficult during dental operations, as in them the narcotizing process has to be interrupted. But during operations on other parts of the body, and where patients can be kept in a horizontal position, there is no doubt that the narcosis would prove very satisfactory in every respect.

The action of pental does not diminish when repeatedly employed at short intervals, on the contrary, narcosis seems to develope more rapidly on a second occasion. On the whole, I should say that the narcosis with pental differs from that with chloroform by its setting in quicker, and not producing any disagreeable after effects, and from that with hydrobromic ether that it sets in a little more slowly, but that it can be prolonged at will.

Pure pental, consisting of hydrocarbon, and being free from any halogen salt, it is easily understood that there are fewer bad after effects and dangers. I have not observed any influence on the action of the heart nor on the respiration. A disadvantage is the peculiarly penetrating scent, similar to that of oil of mustard and certainly more disagreeable than chloroform or hydrobromic ether, but I should think that is not of much consequence.

The same rules and precautions apply to pental as to all other anæsthetics, viz.: removal or sufficient loosening of all garments which impede respiration, perfect quiet in the operating room and not too much light. Nervous and weak persons will require a larger quantity than composed and robust ones who inhale calmly and without fear.

It is not necessary to wait for disappearance of the corneal reflex, which may take place at an early stage, but sometimes very late, it is a question of extracting only one tooth ; but it will be well to wait for it before commencing operations of longer duration.

For an operator who has had no experience with pental, it may at first be difficult to distinguish when the narcosis commences, as corneal reflex and the arms remaining in a given position are not reliable signs that unconsciousness is present. I judge, both by the fixed and staring look of the eye, from the loss of corneal reflex, from the general apathy of the patient, and from the dropping backward of the head.

At first I used to give the pental on an ordinary wire chloroform inhaler, but I found the volatile fluid leaking through the inhaler on to the throat and neck of the patient, and I invariably had to change the inhaler several times. Now I use a modified Junker-apparatus, with which 10 to 12 cubic centimetres are sufficient for one administration, as against 25 to 35 formerly, which is an important item, for pental still costs 25/- per kilo. It also does away with the disagreeable scent, and narcosis sets in in about 40 to 45 seconds.

Summing up the advantages of pental over hydrobromic ether which I have been using in former years, I find that pental is much more reliable, in fact it never fails, the narcosis lasts longer, disagreeable after effects are exceedingly rare, and there is absolutely no danger in giving larger quantities. These advantages are more than an equivalent for the higher price of the anæsthetic, especially as with the use of Junker's apparatus one administration does not cost more on an average than about 6d.

Further experience will show whether the advantages will be confirmed by other dentists. It would be advisable to make some experiments with pental as to blood pressure, and to examine the urine of patients as to sugar, in order to find out in which way the pental affects the organs of the human body, but my time was too much occupied ; examinations of the urine in inconvenient with polyclinic patients and I thought the extraordinary favorable results I experienced in more than 200 cases on my own patients would be sufficient for the present.

REPORTS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF GREAT BRITAIN

The Ordinary Monthly Meeting of the above Society was held on the 2nd Nov., at 40, Leicester Square, the President, Mr. S. J. Hutchinson, M.R.C.S., L.D.S. Eng., in the chair, and a full attendance of members and visitors. The minutes of the previous meeting were read and confirmed.

The President rising, said that before they entered upon the business of the evening he was sure that he would have the sympathy of those present in the painful duty which he had to perform. He had to announce, with great and lasting regret, that since their last meeting Mr. Samuel Cartwright, one of their former presidents, had passed away. He, the President, did not feel competent upon that occasion to enter upon a long speech in eulogy of Mr.Cartwright's qualities, suffice it to say that all recognized in him a leader—recognized in him an honourable professional gentleman whose example all might well follow. The Council had sent in the name of the Society, a vote of condolence and sympathy to Mr. Cartwright's family ; he felt sure that the members of the Society and the profession at large would feel that they had sustained a great loss in Mr. Cartwright's death.

Then again he had to ask them to join with him in a letter of condolence which they proposed to send to Mr. James Smith Turner, in the severe bereavement which had fallen upon him. All would recollect the manner in which Mr. Turner spoke at the annual meeting, and knowing as they did how sincere Mr. Turner was in all his utterances, they would realize to some extent how great his loss must be. He felt that he was only giving expression to their feelings in saying that Mr. Turner had the complete and heartfelt sympathy of the members of the Society, who regarded him with great respect as one of their former presidents.

Mr. Hutchinson had also to express regret at the death of one of their oldest members, Mr. Keeling, of Epsom, whose son was still a member of the society. Without asking them to vote, he would take their silence as expressing the desire that the Secretary should write letters of condolence expressing their sympathy and commiseration in each of the cases which he had mentioned.

The election of Mr. H. O. Merriam, D.D.S., Salem, Mass., as a corresponding member was announced. Mr. S. A. Coxon, of

Wisbech, and Mr. Vernon Knowles, of Reading, were admitted as members. Mr. C. W. Croft, L.D.S. Glas., of Handley, was nominated as a resident member, and Messrs. H. Ernest Goddard, L.D.S. Glas., of Nottingham, and H. Draper Moon, L.D.S. Eng., of Newcastle-on-Tyne, were nominated as non-resident members.

Mr. Carl Schelling and Mr. J. W. Staveley were balloted for and duly elected members.

The LIBRARIAN (Mr. ASHLEY GIBBINGS), being called upon, stated that since the last meeting the society had received a parcel of old books, seven in number, presented by Mr. J. Trude Fripp, of Willesden, published between the dates 1819 and 1858. They were exceedingly interesting, and they were much indebted to Mr. Fripp for them. He had also received the usual exchange journals.

The CURATOR (Mr. STORER BENNETT), announced that two pairs of ancient instruments had been received, one from Messrs. Rutterford & Son, being primitive excising forceps, and one from Messrs. Taylor, which was a combination of screw and blade, forming a pair of forceps for taking out broken down roots.

The PRESIDENT felt that special notice should be taken of the books which Mr. Fripp had been kind enough to send; they were a most valuable collection, for although he believed some were already in the library, he did not think they were of the same edition.

Mr. W. HERN was then called upon for a casual communication, and said that about a year ago when operating for a distinguished Egyptologist, he learnt that he was about to start for Egypt, and with a view to enriching their museum, he asked him if he would kindly remember the society if he met with any specimens of the jaw or teeth likely to interest them. This gentleman had acceded to his request in a way which he thought the society would appreciate, by bringing back a skull of a mummy. Since the skull had been in Mr. Hern's possession, he had been engaged upon it several evenings in dissecting its lips, which were sewn together and prevented a view of the teeth being obtained: he removed the lips. The skull, he took it, was that of a woman, judging from the absence of hair glands in the chin and lips; he could see fibrous tissue but no hair glands. The age was over 25, but how much over he was not prepared to say. The specimen was extremely fragile, and certain portions had been chipped; but acting on the suggestion of the Curator, he had obtained some fish glue and mended these places. He thought it would be unwise to pass the skull round, but the members would be at liberty to examine it on the table at the close of the meeting ; meanwhile, he had some photographs. (passed round.) The jaws were well formed, and of the Roman Arch variety ; the upper jaw contained 14 teeth, the wisdom teeth being absent. The lateral incisors were somewhat smaller than usual. All the teeth were sadly worn by attrition on the masticating surfaces, but they were all free from caries. The masticating surfaces presented an uneven plain to the lower jaw. The lower jaw contained 15 teeth, well developed and fairly normal, but had some peculiar irregularities, viz. : the retention of the lower molars. The second bicuspids were absent, as was the wisdom tooth of the left, though it was present on the right side. The masticating surfaces, like those on the upper jaw, were very much worn and very uneven. In dissecting the lips he found mummy maggots between them, indicating that flies must have been very plentiful at that time. The lips were stuffed with a kind of tow or cloth, and the mouth was filled with a peculiar earth, which Mr. Hern had saved with a view of having it analyzed. In conclusion it seemed to him that the specimen lent very little support to the doctrine of evolution. Mr. Blackden, the Egyptoligist, who kindly brought back the specimen for them, was present with them that evening, and he would be happy to give them any further information in his power.

Mr. BLACKDEN said that the skull was found in a tomb in Western Thebes, which dated from about the 18th dynasty of the Egyptian Era, *i.e.*, about 2,000 years B.C., so that the skull would be about 4,000 years old. The grave had been rifled by the Arabs, who had smashed it open, thinking, no doubt, that there was treasure there ; they also smashed the chest. The way in which he found it was somewhat curious. He was with a companion, Mr. Fraser, and they were trying to find a burial chamber which had been inscribed. They inquired of the Arabs, who told them of one into which they went. It was about 70 feet deep, with a well at the end, but there was no drawing or painting of any kind. There happened to be three chambers, and in the second an extraordinary sight presented itself. The whole chamber was piled up with mummies, and in the darkness these bodies appeared to be in every conceivable attitude. The skull before them was one of two which they selected as the best ; from the mumification he should say it was an original burial, and as he had stated, about 4,000 years old.

The PRESIDENT said that he was sure they were very much indebted to Mr. Hern and Mr. Blackden for their communication ; he thought Mr. Hern noticed the peculiarity as to the temporary molar being retained, he should like to ask if the crown of the second bicuspid was apparent beneath the root.

Mr. HERN interposing, remarked that he forgot to say that the aspect of the bicuspid would be below ; he had not succeeded in finding it.

The PRESIDENT. It was a curious thing, but it struck him that when the second molar is retained long after it should have been shed, it was not followed by a second bicuspid. There was no crown of a bicuspid appearing under the roots of the molar. It was very interesting to learn that a peculiarity observed in the present day, was not unknown 4,000 years ago, as shown in the skull before them.

Mr. STORER BENNETT mentioned that they had in the museum the skull of a monkey with the roots of the temporary molar in the lower jaw, as was seen in the case under discussion. There was no crypt for the bicuspid. The President said that he was very glad to hear Mr. Bennett's remarks upon the subject, it was a point upon which he had often felt perplexed.

Mr. J. F. BENNETT thought a general explanation might be furnished. The second temporary molar, and bicuspid which follows it, belong to a series which is undergoing change and elimination. In dogs, for instance, they had the four pre molars, two of which were gradually disappearing. So far from agreeing with Mr. Hern as to a want of support for the theory of evolution, it struck him that there was just as much room for argument the other way.

Mr. BETTS remarked that the argument he saw against it was that it had taken 4,000 years to develope so far, and they had not got any further.

Mr. F. J. BENNETT regarded 4,000 years as a speck in the history of evolution.

Mr. MAGGS presented to the Museum, on behalf of the Rev. T. S. Lea, of Tedstone Delamere Rectory, Worcester, some teeth and fragments of bone—remains possibly of British times. The donor found them two feet below the surface of the ground ; near were the blackened remains of embers of a fire. The skull fell to dust when exposed to the air. The land where they were discovered had been in pasture ever since the Wars of the Roses. He thought the skull probably belonged to a soldier slain in a skirmish which was known to have taken place at that spot about that date, but the authorities at the British Museum had pronounced the teeth to belong to an earlier date, basing their opinion upon the worn-down aspect of the teeth, evidencing that the user of the teeth had lived upon a food composed of fish and sand. Mr. Maggs, however, could not concur with this view, and he thought it most probable that they were of the date of the Wars of the Roses.

Mr. HERN said, that knowing that they were to have a lantern exhibit, he had brought three slides, but he found they were not adapted for this lantern. He wished to say that the models going round were rather rough, and he should like to take more perfect ones for the Museum, these he proposed to present to the Students' Society. Mr. Hern continuing, said that he had another casual communication to make; it was rather unique in his experience, it was a growth on the upper jaw of considerable size. The patient, a woman, aged sixty-two, presented herself at the Dental Hospital, Leicester Square, early in September with a tumour on the jaw, no pain existed beyond a slight dragging sensation. About a year ago she noticed a swelling on the left side, and described it as a seam or patch on the jaw, she had been wearing an artificial plate for about six years, but latterly had done so with some difficulty. Mr. Hern first saw her on the Tuesday, and as she was very anxious to get rid of the growth, he asked her to come the following day, intending to have a photographer present in order that a photograph might be secured of the very peculiar appearance the woman presented, but as she was unable to come as arranged he was disappointed, and had to remove the growth without a photograph being taken. He exhibited the tumour which was pear shaped with the stem backwards, its upper surface was uneven, rough and papilliferous, the lower surface was more uneven, and marked by the edintulous lower alveolus. The patient continued to wear the plate although she did so at an angle of 45 to the horizontal, when she wanted to speak she put it out into the left sulcus. The tumour was hard and gristly in consistence, it looked like a round cell sarcoma, but the length of time it was growing inclined Mr. Hern to the opinion that it was an innocent tumour. (The patient was present and was examined by the members). Mr. Hern said he would be glad to know if any members had met with a similar case, and also what the prognosis of the case might be.

Mr. ASHLEY BARRETT presented models of the mouth of a man aged twenty-four, he seemed strong, robust, and athletic, and had never suffered in any way from syphilis in any form. The model showed thirteen temporary teeth and eight permanent ones.

Mr. R. H. Woodhouse in connection with Mr. Barrett's case, wished to throw out a question as to the limit of age when the temporary teeth existed, in his opinion he should put it not after fifty, he had a patient about forty-five when the temporary teeth became loose and came out, he thought it was a good opportunity for asking the experience of members.

The President said that the question raised by Mr. Woodhouse was a very interesting one.

Mr. Betts in the absence of Mr. C. S. Tomes showed for Dr. C. Woodburn a pair of excising forceps with triangular blade.

Mr. James Stocken presented models of a case of erosion. When he first saw it his impression was that it was a case of fracture, but looking at the two models, he could scarcely believe that the condition had been caused by fracture, at the same time he had never seen a case of such decided erosion before.

The President mentioned that arrangements had been made by the staff of the hospital to show the electrical system that has been introduced there; it was not quite finished, but if any members present that evening would like to see it in its present state, the staff would be happy to show it at the close of the meeting. Mr. Boyd Wallis said he had an electric switch-board for electrical and dental purposes which he would show and explain if time permitted.

Mr. A. Hopewell Smith then read a paper on—

"A New Method of Preparing Sections of Teeth and Bone to Demonstrate the Hard and Soft Tissues in Combination."

He said that the process advocated by Mr. Mummery in his excellent paper of last year, though difficult to follow, was scientific and productive of most faithful results, but its complexity and the time it required rendered it tedious and at times disheartening. With a view to overcome these difficulties, and as an adjunct to other processes, Mr. Hopewell Smith had adopted a new method. The three great principles underlying his process are: (1) hardening or "fixing" the soft tissues; (2) complete decalcification of the hard tissues; and (3) their thorough impregnation with gum or celloidin preparatory to cutting by means of a microtone. The employment of decalcifying agents, though latterly strongly deprecated as unscientific, had the support of Schäfer, Kleinenberg, Ebner, Lee, Klein, Colman, Haug and others, and personally speaking, Mr. Hopewell Smith found the use of softening re-agents compare in the results most favorably with sections prepared by methods of grinding down or cuttting without decalcification.

The details of the process are as follows :

(I.) Immerse a newly extracted tooth in Muller's fluid for three to four weeks, and remove to spir. vini. rect. for ten to twenty days. Alcohol (84 per cent.) may be used instead of Muller's fluid.

(II.) Remove, wash in water, and seal up apical foramen with collodion.

(III.) Place tooth in 15 c. c. of following solution :—

HCl 10 parts.
HNO_3, 22 parts.
Aq. dest., 100 parts.

Take 12 c. c. of 10 per cent. solution of HC, and at end of 15 hours add 1·5 c. c. of HNO_3, and at end of forty-eight hours add 1·5 c. c. of HNO_3 from commencement of immersion in acid solution.

(IV.) Remove tooth at end of seventy-five to eighty hours and wash in solution of lithium carb. (five grs. to an ounce) for half an hour. Wash thoroughly with distilled water.

(V.) Divide tooth by razor into several pieces and wash again in H_2O. Place each piece in gum mucilage (B.P.). Leave in mucilage twelve to fifteen hours.

(VI.) Transfer to stage of freezing microtome, cut, wash sections, and stain with orange rubine, or gold chloride, or borax-carmine, or Weigert's solutions.

(VII.) Dehydrate in absolute alcohol three minutes, "clear" in cedar oil one and a half minutes, and mount in Canada balsam.

The primary object of the method was the retention *in situ* of the soft tissues—whether anatomical or pathological—in such a manner that the morphology of the fibrous, cellular and vascular elements of pulp and periosteum, in conjunction with cementum and dentine, is in no wise altered and disturbed. Microscopically this is easily observed, but it is only microscopically that its real value becomes apparent. Further, although decalcifying agents are employed, it is nevertheless a fact, curious as it may seem, that the results approximate more closely to the structure of the living tissues than "dried" sections of teeth and bone. There is a vast difference between the skeleton of a tooth and its normal structure. Therefore the first great advantage is that soft parts are retained in normal relationship to the hard tissues. Moreover, it was particularly useful for dental pathology, as well as anatomy and comparative anatomy. Stains penetrate quickly and permanently. Sections of spinal column, with the cord surrounded by membranes and bone, can be easily prepared and cut. The only disadvantage is that the enamel is not preserved, the action of acids being to remove it before dentine is sufficiently softened.

Over a dozen slides were thrown on a screen by means of a lantern, and fully described by Mr. Smith. They included longitudinal and transverse sections of teeth, polypus of the pulp, the tooth of a hake, and a transverse section of the spinal column.

In conclusion, Mr. Smith hoped that not only would future trials lead to satisfactory terminations, but that a decided impetus would be given to research in the science of dental anatomy and pathology.

The PRESIDENT remarked that the hearty way in which Mr. Smith's paper had been received showed how thoroughly it and the interesting slides illustrating it had been appreciated; he hoped they would have a good discussion. Of course Mr. Smith had opened up a good deal of matter not strictly within the limits of the subject, he had opened a good many questions on pathology, he also alluded to the researches of Mr. Howard Mummery and Mr. Underwood, and therefore he proposed to ask Mr. Mummery and Mr. Underwood to speak upon the question.

Mr. H. MUMMERY said he thought they were very much indebted to Mr. Smith for giving them his process for cutting hard and soft tissues. Though of course he thought his process the best when skilfully done, yet it was doubtless a very tedious one. He had not seen many of Mr. Smith's preparations. He should have liked to have seen the layer of dentine showing the globular masses. He was not prepared at present to criticise the process very fully, but he thought it was one from which they would be able to make a very great deal.

Mr. ARTHUR UNDERWOOD said that, as the President had been kind enough to mention his name, he felt bound to respond to his call, but he was very much handicapped, as he had not yet had an opportunity of trying the process. As far as could be seen or judged from the very lucid description and the photographs, it maintained one important point, viz.: it retained the hard and soft tissue, but he was bound to say he shared some of

Mr. Mummery's doubts, and he also had an old-fashioned dread of the hardening process; all he could say was that Mr. Smith had advanced the decalcifying process by making it more brief; he thought they were greatly indebted to Mr. Smith, who had already done very valuable work in microscopical anatomy, and whose labours in the same field, he hoped, would be even more productive in the future.

Mr. HERN desired to know whether Mr. Smith had been able to differentiate the lymphatics. Had he seen any lymphatics in the pulp?

Mr. HOPEWELL SMITH, briefly replying, thanked Mr. Underwood for his kind remarks, and said, with reference to Mr. Mummery's observations, he had not seen any. He had not cut very many sections of young teeth. Once he had found a layer of forming dentine in young teeth, but he did not think the rounded masses were clearly seen. He had not seen any lymphatics in the pulp or dentine, but he had in the periosteum.

After the announcement that the next meeting would be held on the 7th of December, the usual votes of thanks concluded the meeting.

Students' Society, London Dental Hospital.

ORDINARY GENERAL MEETING, held Monday, November 16th, 1891, Mr. E. LLOYD-WILLIAMS, President, in the chair. The minutes of the previous meeting having been read and confirmed,

The following members were ballotted for and duly elected members of the Society:—Messrs. Densham, Gosschalk, Bowden, Brown, Freeman, Park, Henly, Burton, Atkinson, Torpey, Soper, Sallerthwaite, Walker, Jones, Badgery, Seccombe, Melleish, Densham, Halliday, Mudie, Coles, Sumerling, Gabell, Dunlop, May, Gilmour, Bride, Dobbs, and Ham.

On casual communications being called for, Mr. CLARENCE showed a small tooth shaped rather like a lateral incisor, taken from where the left upper wisdom ought to have been.

Mr. HERSCHELL mentioned that he had found it very difficult to keep a burr in the ordinary White right angle; directly you came to cut a hard part of the tooth, the screw became loosened and the burr dropped out; he had overcome this by using a right-hand screw instead of a left as it was at present.

Mr. J. P. Smith showed models of a case of absence of several of the permanent teeth in a girl aged twenty, the missing teeth were the lower four incisors, the upper laterals and the upper right first and second bicuspids.

Mr. Fairbrother showed a case of a supernumerary occurring on the lingual surface between the lower right canine and first bicuspid.

The President then called upon Mr. S. H. Hayward for his paper on "Antiseptics used in Dental Surgery."

Mr. Colyer said he did not like iodiform, it made the room smell so, besides, he did not think it made a good permanent root filling, and as he always did immediate root filling he never used it as a temperary dressing. For dressing roots he always used a solution of perchloride of mercury in alcohol, and in those buccal roots of upper molars which it was sometimes impossible to fill he put a minute quantity of arsenic. He thought that in treating a dead tooth you ought to prepare your cavity thoroughly, and then start on your canals and swab out with peroxide of hydrogen, and clear them out very carefully and by degrees.

Mr. J. P. Smith found it very difficult to keep peroxide of hydrogen good, and thought the only way to do so was to get small quantities at a time. He liked perchloride of mercury very much for dressing roots, and thought it best used 1 in 250 or even stronger.

Mr. Northcroft said that he was sorry Mr. Hayward had not mentioned the naphthol series, he thought them most valuable additions to our stock of antiseptics. If half per cent. of hydrochloric acid were added to peroxide of hydrogen it would help to keep it good, he also found the latter very good for cleaning stained teeth, especially those discolored by taking iron.

Mr. May strongly advised those present not to use peroxide of hydrogen for cleaning teeth. With regard to the disinfection of instruments he thought boiling water was the best, but it took five minutes to thoroughly sterilize them.

Mr. Sanson regretted that Mr. Hayward had not mentioned copper sulphate, he thought for pyorrhea it was the best drug that could be used.

Mr. Coysh said that copper sulphate was mentioned by Professor Miller as a good root filling.

Mr. Schelling asked whether solutions of perchloride of mercury discolored teeth. He had lately used hydronaphthol and thought it was very good.

The PRESIDENT said he was surprised not to have heard that evening the best disinfectant of them all, and that was cleanliness. Listerism was only cleanliness and the disinfection of instruments, and he thought it much easier to disinfect instruments than members seemed to think, they ought to be wiped thoroughly clean and then dipped in an antiseptic. He did not believe in peroxide of hydrogen, it had made a great stir a little while before, but he thought it a poor antiseptic. It was popularly supposed that the bubbling that it caused was the drug acting upon septic material, but he thought that it was much more probably caused by the acid contained in it acting on the alkaline purulent matter on the root canal, and causing a liberation of carbonic acid gas; he did not believe in it for cleaning teeth, as it simply acted by the acid which it contained and which was a variable quantity, and if you want to clean teeth with an acid it was much better to use one the strength of which you know. He had quite given up the use of iodol, as he found that it discolored all the teeth it had been used on. He thought the naphthol series a most valuable one, and he had used hydronaphthol for about two years and still liked it very much. Nobody had mentioned anything about permanent root filling, for which he always used hydronaphthol mixed with osteo. He himself nearly always did immediate root filling and had great success from it; in those difficult cases in which he was unable properly to clear out and dry the buccal roots of upper molars he used plaster of Paris, mixed very thin with a solution of 1 in 100 perchloride of mercury, and in those cases where there was any moisture left in the canals the plaster soaked it up. He put twenty per cent. of hydronaphthol with his osteo.

MR. HAYWARD then replied: I must apologise to you for having written a paper dealing so much with the composition and properties of the various antiseptics mentioned rather than with their practical use, but I was led in part to do so by the belief that the knowledge of *materia medica* possessed by the dental student is too often of a very " sloppy " kind, and I think a familiarity with what may appear but dry details is really necessary for the intelligent use of the drugs and chemicals comprised in our pharmacopœia.

A great deal has been said this evening (I.) about the instability of peroxide of hydrogen, and (II.) about impurities in it in the form of free acid; concerning its instability I would say, confine your use to ozonic ether, and I think if you do this, keeping it well stoppered and in a cool dark place, you will not be troubled by its deterioration ; (III.) if you desire to use the aqueous solution and to be sure of its purity, make it yourselves. I have not myself noticed perchloride of mercury to have any effect in darkening the teeth it is used upon ; but Dr. Miller, I believe, suggests the restriction of its use to back teeth. It was certainly a grave omission on my part not to have included the naphthol series in my list ; they have, I believe, proved extremely serviceable with some, though I regret to say I have not as yet had any practical acquaintance with their use. I should like to draw attention to the point I mentioned, but did not perhaps sufficiently emphasize, viz. : the necessity in applying antiseptics to carious dentine, and of leaving the dressing in contact with the dentine for a much longer period than is usually allowed ; more than one of the gentlemen who have taken part in the discussion this evening had spoken of "wiping out the cavity with the antiseptic"; this would appear by experiments to be of the smallest possible value, if not perfectly useless.

The PRESIDENT proposed a vote of thanks to Mr. Hayward on behalf of the Society, and announced that on November 30th there would be a clinical evening at the Hospital, and that the next meeting of the Society would be on Monday, December 14th.

The National Dental Hospital and College.

THE Annual Dinner of the Past and Present Students was held at the Holborn Restaurant on the 20th ult. Mr. John Langton, F.R.C.S., in the Chair, supported by Dr. Dudley Buxton, Messrs. Henry Morris, S. J. Hutchinson (President of the Odontological Society), F. Canton (President of the Representative Board of the British Dental Association), Felix Weiss, and a distinguished company, numbering over eighty.

The repast being ended, Mr. John Langton presented the prizes to the successful students.

At the conclusion of the distribution, the speeches followed. After the usual loyal Toasts had been duly honoured, the Chairman proposed the Toast of the evening, viz., "The Hospital and Staff," and said that he did not intend to enter into any abtruse speculation as to the origin of dentistry, nor as to when it ceased to be an art and became a science—for undoubtedly now it might take its full professional rank as an art and a science—nor did he feel competent to enter into any history of the National Dental Hospital, but he did know that it was opened in 1861, and that it was, he believed, the first Dental Hospital. The Metropolitan School of Dental Science was removed to the National Dental Hospital, and if he might so say, they became engaged in 1877; this engagement was terminated and ended in marriage, for the students increased to such an extent that it was deemed essential to re-organise the Metropolitan School on a more satisfactory basis, and thus came about the marriage of the National Dental Hospital and the Metropolitan Dental School of Science. In the morning he had had the privilege of being conducted over the school in Great Portland Street by their worthy Dean, and he was very much struck by the way in which the details were carried out, and with the method and system which prevailed. He passed through the rooms, and was much impressed by the thoroughness of their work, and their interest in it. The evidence of the skill of their fingers suggested to him that it would be well if the students of the general hospitals had some of this deftness in handling their instruments, and he thought that it would not be amiss if they went through a course of training in dental surgery. He then went to a floor still higher where the school work was going on, and there he found evidence that dentistry had ceased to be a mere art, and had become a science both in its practice and in its teaching. He would say a few words on dental teaching, though he did not know whether he should be agreed with ; he knew it meant a large amount of extra work, and he knew also that dental students had their time very much engaged, if not more so than the general students. He was struck with the amount of work that they had to get through, but he thought that a knowledge of general surgery was of very great importance, for they all knew that many malignant forms of diseases were closely associated with the condition of the teeth. More malignant diseases had their origin in the mouth than in any other part of the body, and therefore he would press upon them the necessity of paying special attention to physiology and anatomy. They might take their Licentiate in dental surgery and stop there, or after that pass on to take the M.R.C.S. ; in 1891 there were 145 Licentiates, and of these 107 had taken the M.R.C.S. He took this to be a most encouraging circumstance, but only an earnest of what is to come. With reference to the examinations in dental surgery, like all other examinations, they had a tendency to get more severe as time went on. There yet remained one point, and that a very agreeable one, viz., at the marriage of the Hospital and College, they took a house, and it was now in contemplation to take a very much larger series of premises, so that they might adapt themselves to the increased requirements, not only of the patients, but also of the students of the school which would naturally follow. He would now give them the Toast of the Hospital and Staff, "Might it increase in prosperity and live in perfect unity"; with the Toast he begged leave to couple the name of the Dean.

The DEAN desired to return his thanks for the very laudatory terms in which the Chairman had proposed the Toast, and for the kind manner in which it had been received. With regard to the hospital, they would be aware, from the dates quoted, that this year they had completed 30 years of work, carried on in Great Portland Street. That the public had appreciated that work, might be gathered from the fact that whereas during the earlier years the cases dealt with were from 3,000 to 4,000 a year, they now amounted to considerably over 30,000. With reference to the Committee of Management, he was sure the same enthusiasm existed now as existed thirty years ago, and in the movement to complete the new hospital, their greatest efforts were brought to bear to attain that end. It was not his privilege to "let the cat out of the bag," but he would just unloose the strings: it was their first intention to build a hospital, but owing to the vexatious manner in which a gentleman had held out for the value of the end of the lease of the new site their plans had been delayed, but now a promise had been made to them which he hardly dared whisper. Their building would consist of three storeys and a large basement, giving accommodation for at least seventy students, and for one hundred to one hundred and fifty patients at a time. There would be special rooms for the administration of gas, and finally a room where the patient after an operation had been performed could retire and be restored; and further, that patient would not be allowed to return into the building to exhibit any expression of fatigue, but there would be a special exit—and by those familiar with the pale and distressed look of a nervous patient after undergoing an operation, this arrangement would be recognised as most humanitarian. Let him now refer to the next floor, which would contain a commodious library, board room, and other rooms for teaching and administrative purposes. On the floor above would be a lecture hall, stopping room capable of holding from forty to sixty chairs, and also quarters for the resident house surgeon. The Dental Hospital of London had found it necessary to keep open during the afternoon, so that students might attend to the work in a more convenient way. The National Dental Hospital would also have to do the same, and for that purpose a resident house surgeon would be provided. There would be ample accommodation for hats and cloaks, and he hoped by this time next year to be able to entertain their guests in their own hall. As regards the staff and the examination, he would say that only one gentleman had been referred since 1889, a fact which he thought indicated that their work had some merit in it. In conclusion, on behalf of the management and also on behalf of the staff, he begged to thank the Chairman for the encouraging words he had spoken.

Dr. MAUGHAN gave "The Hospital and Staff," and said their Dean had referred to the connection of the staff with the hospital, but it fell to his lot to reveal something of the link between the staff and the students ; a link welded together with honest work and truest sympathy. The old students who had passed from them could testify from their own experience that they never came back to their old home or to their old teachers without finding ready help and welcome.

Mr. J. T. FRIPP, in responding for the past students, said that there was one thing he might say without the slightest fear, that all felt a sense of gratitude to the hospital for the advantages they had derived from it. There was one matter he would like to refer to, viz. :—the facilities which the National Dental Hospital and College had offered to men who would otherwise have found it impossible from their circumstances to go through the full curriculum, men who were already in practice and who must practise. Speaking for himself he felt exceedingly grateful for the grand work that they had done in this direction. Past students would always feel a great love for their hospital, and look forward to seeing her in her new building with increased facilities for work, and they wished her every prosperity and success.

Mr. REGINALD BASCOMBE, speaking for the present students, said it was a feature among the students of the National Dental Hospital that whatever they undertook to do, they did to the best of their ability, whether in study or recreation, so that to no one of them present would the well-known quotation apply, "Hannibal cum victoria posset uti,—frui maluit." Each one had come to make the most of his opportunity, to pay a debt, to fulfil a duty, and to cement more strongly than ever that bond of friendship—both to each other and their institution—which existed amongst them.

Mr. George Cunningham, in proposing the Toast of the Visitors, regretted the absence of the Rev. J. Oakley Coles, who was to have responded, and paid a warm tribute to his abilities and his services to the dental profession. He desired to associate with the toast the name of Mr. S. J. Hutchinson, President of the Odontological Society of Great Britain, who during his year of office had not only enhanced his own reputation, but had also by the manner in which he had upheld the dignity of his office, added fresh laurels to the Society of which he was President.

Mr. S. J. Hutchinson, after thanking the proposer of the Toast for the kind way in which he had coupled his name with it, joined with Mr. Cunningham in regretting the absence of Mr. Coles, who heart and soul represented honour to the profession, and was generally recognised as one of its most eloquent speakers. Mr. Hutchinson was glad to find that although he saw many gentlemen standing, yet they were in a minority, a fact which demonstrated the interest and the love which the students past and present, entertained for their Alma Mater.

Mr. Sydney Spokes proposed the health of the Chairman.

Mr. John Langton briefly responded.

The evening was enlivened by a most excellent musical entertainment by the Meister Glee Singers.

Dental News.

The Dental Hospital of London.

The Annual Dinner of the Staff and Past and Present Students will be held on Saturday, December 5th, at the Holborn Restaurant, under the presidency of Mr. David Hepburn. Gentlemen either now or formerly connected with the Hospital or Medical School, who may, through inadvertence, not have received special notice, and who desire to be present, are requested to communicate with the Dean, at the Dental Hospital, 40, Leicester Square.

THE DENTAL RECORD, LONDON: DEC. 1, 1891.

THE MANAGEMENT OF DENTAL CHARITIES.

THE ATTENTION of the American Dental Association has recently been drawn to the subject of the use and abuse of Dental Charities, and, as it is a matter upon which we are largely interested, it may be worth while to see whether we cannot learn some practical points from our Transatlantic *confrères*. Wherever there are competing schools associated with Dental Charities, there must be a fear, lest the anxiety to keep well ahead with the "number of cases treated," should induce a relaxation in the vigilance with which the social condition of the patients applying to the Charity for relief is investigated. Dr. Richard Grady, speaking before the Society, said the American Dental Colleges were very loose in the way in which they dispensed the Charity, resulting in "a lowering of the profession in public esteem, pauperising the people, and defrauding dentists of their rightful fees." In New York, we are told the amount of free work done during the last ten years is increased 90%, "the hospital patients being in many cases conspicuously well dressed." Concerted opposition to the indiscriminate admission of patients to Dental Charities in Baltimore has led to a request being preferred to the directors that a register should be kept near the door, headed "for the poor only," and therein enclosed the name and address of each patient, with a declaration of their *bonâ fide* poverty. This is what practically is done in London and, we believe, in the provincial towns, but unless some further precaution be taken, we fail to see how the institutions are safeguarded. If an individual is mean enough to defraud a charity by attending *in formâ pauperis*, he will not stop short at lying. But it is suggested that such list should be open to public inspection. Even here what is to prevent falsification of name? A further evil, which fortunately we are free from here, is animadverted upon gravely, viz.:—

the practice pursued at some dental colleges of allowing students to deal with "their own patients" while the Charity pays the piper. Cases of this kind have from time to time been reported to the authorities of the English Schools, but have always been dealt with as serious misdemeanours, and punished accordingly. Among the suggestions offered by the author quoted above is that no vacation work should be carried on; this, he thinks, would ensure that due supervision by a dental surgeon would in every case exist. But unfortunately the work at the Dental Charities has undergone so very great an extension during the past few years, that such supervision, even during term time has become a matter of great difficulty, although the officers are thoroughly conscientious in the discharge of the trust committed to them.

OUR readers will be pleased to learn that with our next issue, *i.e.*, for January, we propose to commence a series of articles from the pen of Mr. Booth Pearsall, which will deal with practical questions of the workroom and professional work. The name of the writer will be an earnest of the thorough-going practicality and utility of the papers. It is proposed to illustrate these articles by numerous carefully prepared drawings which have been executed for that express purpose.

CORRESPONDENCE.

[We do not hold ourselves responsible in any way for the opinions expressed by our correspondents.]

To the Editor of the "DENTAL RECORD."

Is Dentistry a Dangerous Profession?

SIR,—I think that the thanks of the Profession at large are due to Dr. Dudley Buxton for his very able article on the hygiene of a Dentist's Life. This article has, I see, already been answered, but in a way that shews, perhaps, that the writer hardly read the original in the way it was intended. Surely the dentist with a small practice has more time to devote to the health-giving exercises which Dr. Buxton suggests than his less fortunate professional brethren?

Yours truly,

L.D.S.,E.

Cocaine in Extraction.

"*To the Editor of the* DENTAL RECORD."

SIR,—Will you allow me to point out the desirability of invariably using cocaine by *surface* application, to prevent the distress caused by the crush of the forceps in extraction. Very often, and especially with children, it is nearly the only really distressing part in the operation when there is no abscess at the fang of the tooth. The *injection* of cocaine is said to be somewhat dangerous, and not so safe as gas. But the mere surface application to the gum of the tooth should never be omitted in any case until a more effective local anæsthetic is discovered. To a noble-minded practitioner the giving of pain is as distressing as the suffering of it to the patient. It would be well if all dentists kept a bottle of the best brandy close by them in case of any of their patients requiring a tooth extracted, who have suffered much the previous night and have thereby their strength greatly reduced and their nerves quite unstrung. Gas might in many cases be avoided if the dentist gave them two tablespoonsful of brandy in half a tumbler of hot water. The necessity of it would be at once perceived by an experienced practitioner.

Yours, &c.,

November 28*th*, 1891. ANODYNE.

Journalistic Memorabilia.

It is a well-known fact, says Dr. Cheney, that thermal influence will account for the deaths of thousands of pulps under gold and amalgam fillings. Hence, some new conducting material should be used in every case where the pulp is at all near the cavity to be filled. For the protection of the pulp, Dr. Cheney thinks varnish the most useful, and next to this the oxyphosphate chloride and sulphate of zinc ; the advantages of varnish being that it is easy of application, non-conducting, non-irritating, and insoluble :—

"Oxyphosphate of zinc is a most excellent basis, it is adhesive, " does not shrink, and is indicated where the walls of the tooth " needs strengthening ; in deep-seated cavities where undercali " exist, if the enamel be strong it need not be cut away, for when " the cement be carefully packed it forms a support almost " equivalent to dentine ; when using oxyphosphate of zinc care " must be taken to protect the pulp, this can easily be done by the " use of a little varnish."

Dr. Cheney has found good results following the addition of gold to a filling previously filled with amalgam, which has caused pus, the gold being introduced in such a way that it may be in contact with the dentine and amalgam.

A method of saving weak walls of bicuspids usually sacrificed for crowns.

The roots should be filled, leaving the principal part of the pulp chamber to serve as anchorage for amalgam, then the cusp cut off beyond the possible line of occlusion with its antagonist of the opposite jaw. Next varnish a piece of thin platinum over the stump and towards the cavity wall, then carefully remove this, and flow gold on the upper surface to form a cusp, fit again and re-varnish the flow, solder over the face of the platinum to make it rigid, then carry to its place with thin cement, and hold till firmly set. A copper band matrix, previously made to fit the tooth, should now be applied, and filled well with amalgam, this should then be removed at the end of three days and the filling carefully finished.

Dr. E. C. Kirk claims wonderful results in pyorrhœa alveolaris by the use of aristol. He says, "All attempts to remove the deposit were rendered futile at this sitting by reason of the extreme looseness of the teeth and soreness of the tissues, as a preliminary treatment, therefore an application of aristol was made as follows: A ten per cent. solution of aristol in oil of cinnamon was made by rubbing the drug up with the oil on a glass plate by means of a spatula, and with this solution threads twisted from a wisp of absorbed cotton, and cut into half-inch lengths, were saturated and gently carried by means of a blunt probe to the bottom of each suppurating pocket, the effect being made at the same time to encircle the root at the base of the pocket with the medicated thread; after each diseased alveolus had been so treated the case was dismissed for twenty-four hours. The result shown at the next setting upon the following day was most gratifying as it was surprising, for all inflammation of an acute type had subsided, there was an entire absence of febar, the flow of pus had entirely ceased, and the soreness had so completely vanished that thorough removal of the calcareous deposits was undertaken and carried out at this sitting as far as the limits of time would allow; an application of aristol in cinnamon oil, as in the first instance, constituted the final dressing, and no other medicament was used during the treatment, with the exception of aromatic sulphuric acid which was applied after the mechanical treatment by scales for its solvent action upon any small granules of tartar, which escaped the action of the instrument. The case was treated weekly for about two weeks, and the improvement which took place at first has gone on steadily."

Selections.

ALVEOLOTOMY.

By G. S. Junkerman, M.D., D.D.S., Cincinnati, Ohio.

Alveolotomy, from whatever cause, means simply perforation of the alveolar process. There may be one, two, three, four, or more perforations, and it would then be styled single, double, triple, quadruple, etc., according to the number made. The alveolotomy may arise in the natural process of disease in nature's effort to throw it off, or from the interference of the surgeon. Alveolotomy, when the result of the surgeon's interference, has perhaps always been performed for the relief of alveolar abscess. More skill is required in performing an alveolotomy than in lancing any other kind of abscess. Abscesses usually manifest the point at which they wish to make their exits; the point for alveolotomy must be determined by the surgeon himself.

Alveolotomy may be performed upon any of the alveolar cavities of the thirty-two teeth; but any other than a single operation ceases to be practical; therefore that can best be performed on any one of the eight anterior teeth of both jaws. Upon these teeth the operation is made with the best results in the order named,—the lateral incisors, the bicuspids, the central incisors, and the canines. The operation is more often indicated in the upper than in the lower jaw, and is followed by better results.

The indications for alveolotomy always presuppose the presence of an abscess; but the operation is preferably performed at the termination of the abscess, or during its progress. The end of an abscess, it will be argued, is an alveolotomy performed by nature for the exit of pus. This is true, and nature's operation is the best indication for that of the surgeon. You cannot style that an alveolotomy where the surgeon dilates the opening already made by nature to remove the abscess and disinfect the cavity. It would be unwise to interfere by operation on cases of abscess where nature has not yet made an opening. The operation should be avoided at the abscess stage, as being only a means of inflicting additional pain, and in no manner accelerating the arrival of relief. The true operation of alveolotomy is indicated when drainage is required, or in case of burrowing abscesses where the pus has invaded the soft tissue. The operation is most frequently indicated in abscess of the lateral incisor. So closely related is this operation and the lateral incisor that it might be called *lateral* alveolotomy. The oral surgeon cannot speak of abscesses of the teeth in one category. To the observing operator the difference of lateral abscess from that of any of the other teeth must again and again force itself upon the attention. It would be impossible to give statistics ; but in every one's experience there must appear the fact of the frequency of these becoming abscesses of the hard palate. All abscesses of the hard palate arise from the lateral incisor. If your attention is turned to the anatomy of the alveolar process of the superior maxillary bone in the proximity of the lateral incisor, you will observe that the arrangement of the parts is responsible for this frequency of palatine abscess. In cases where the root of the lateral is not extraordinarily long, the wall of bony tissue posteriorly is thinner than anteriorly, or equally as thin as the anterior wall, and consequently the resistance of both walls approach an equality. Therefore the abscess is as likely to make its exit posteriorly as anteriorly. With the central and the canine the case is different. The roots of these teeth extend further into the cancellous tissue, and the posterior walls become correspondingly thicker than the anterior. Knowing this anatomical fact, it only becomes a problem of physics to determine why these lateral abscesses result so frequently in those of the hard palate. If abscess of the hard palate be present, no matter how diverse the indications may be, it will be wise to always suspect the lateral incisor. This tooth furnishes the best case for an alveolotomy. Where the abscess has extended to the hard palate, opening it in this position does not furnish sufficient drainage. There is too much cancellous tissue and too great an extent of surface to drain by one opening. These are then the circumstances which indicate the perforation of the alveolus, by which a perfect drainage can be secured. The alveolotomy may be performed almost painlessly by the previous injection of cocaine. The perforation should be made at the apex of the lateral or as near to the apex as possible. A spear-shaped bur with rapid rotations of the engine should be used to perform the operation. Experience and the acquirement of skill are the only guides to discovering the exact position for the perforation. To sum up, then, the object of this paper has been to identify with surgery the operations which I think I have properly designated alveolotomy.—*International Dental Journal.*

TRANSACTIONS

OF THE

ODONTO-CHIRURGICAL SOCIETY.

NOVEMBER 1890.

EDINBURGH:
PRINTED BY JOHN LINDSAY, 172 HIGH STREET.
1890.

NOMINATIONS.

ALEXANDER KAY FINLAYSON,
23 So. Castle Street, Edinburgh,
L.D.S. Ed.; D.D.S. Univ. of Penn.

KEVIN EMMET O'DUFFY,
55 Irish Street, Dumfries,
L.D.S. Ed.

ODONTO-CHIRURGICAL SOCIETY OF SCOTLAND.

The First General Meeting of the Society, Session 1890-91, was held on November 13th,—the President, Mr JOHN A. BIGGS, in the chair.

After a few introductory remarks, the PRESIDENT vacated the chair and proceeded to give a demonstration on Dr Reichter's Glass Inlays. He showed several teeth with the work in various stages, from the prepared cavities to the completed inlays, many of the cavities being, for ordinary inlay work, very difficult. He also showed a canine tooth with a large cavity in the labial side, which he filled with an inlay in a few minutes. Mr Biggs said he did not come before the meeting to advocate inlay work at all ; he thought it had not been sufficiently long before the profession to definitely say whether it would be permanent or not. His opinion was that the cement necessary for its retention would give way, unless in circular cavities. But he thought it would interest those who had not tried it, and therefore he had brought it before them. This kind of inlay promised much. It was rapid, simple, and effective. It was difficult to attain the desired shade, and required care and scrupulous cleanliness in its manipulation ; but the result could be achieved in a tenth of the time necessary in the use of porcelain inlays.

The demonstration was received with much interest, but, in accordance with the custom of the Society, the discussion was postponed till the following meeting.

On the President resuming the chair, Dr **Williamson** read a communication entitled

Notes on the Demonstrations at the Berlin Congress.

I have just put together a few notes on the demonstrations, in the hope that they may interest those who were not present.

The Dental School in the Dorotheen Strasse seemed a very conveniently arranged building, the rooms well lighted, and the dental furniture, such as the operating chairs, very good indeed. It was a pity that some systematic arrangement was not made in regard to the demonstrations, as they suffered considerably from the want of it; each demonstrator pitched his tent when and where he pleased, and there was a good deal of difficulty in getting patients suitable for the various operations.

The great crush was in the Extraction and Anæsthetic Room, owing, probably, to the fact of the exhibition of Bromide of Ethyl, an anæsthetic first used as such, by Nunnely of Leeds, as long ago as 1849, and which seems to have been taken up of late by many German dentists. As Dr Silk, the London anæsthetist, remarks, in a letter to one of the journals, the conditions were such, that it was impossible to come to any satisfactory conclusions in regard to it. The narcosis is certainly not profound, and the curious English translation of a paper in German, "Stunning by Bromide of Ethyl," seemed to give a more accurate description of its effects than was perhaps intended by the translator. One patient, for example, a youth of about twenty, struggled and plunged about, called out, "Halten sie, halten sie;" but when quite conscious, half a minute later, ejaculated "Gar nichts," when asked if he had felt any pain. I could not help thinking that such an exhibition would be very demoralising to any chaperone or unprofessional companion of a patient in private practice. Prof. Busch, in reply to my question, said he certainly preferred gas to the Bromide of Ethyl. It is given much in the same way as ether, a facepiece being used, with a valve which is raised and the liquid dropped on a piece of flannel situated within the opening. A few weeks ago, a paragraph appeared in the *British Medical Journal*, giving a great number of untoward results from its use, including several deaths; and this fact of its not being so safe as was originally supposed, combined with the difficulty of obtaining and keeping it as a stable compound, will probably lead to its abandonment, or, at any rate, very partial use. The only other anæsthetic of a general nature that I saw used was gas, alone.

There was one point in the matter of the operation of extraction itself which must have been quite novel to many, and that was, the manner of removing upper teeth. The operator stood at the back of the chair, the patient having the head well bent backwards, and, grasping the forceps with the handles farthest from him, pushed, or rather drew, the blades towards himself. In this country, the operator always, I presume, stands on the right side, puts the left arm round the head, the right arm being as close as possible to the body, and the forceps are held with the thumb directed towards the blades, resting on and partly between the handles, near the joint, helping the fingers to control the amount of pressure on the tooth. In the German method,—or, perhaps, only the Berlin method,—the head is not under such thorough control, and the outstretched position of the arm, combined with the position of the thumb, resting on one of the handles, just where they are widest apart, is sufficient to destroy, at any rate to a great extent, that tactile sense which is so necessary for the successful performance of the operation. A better view may perhaps be obtained, but certainly not any better practical results, if one might judge from seeing a few cases.

Passing to local anæsthesia in the case of sensitive dentine, there were two new methods exhibited, both by Americans. Dr Curtis showed an apparatus for employing nitrous-oxide gas, by means of attaching a strong leather-cased piece of tubing to the bottle, the other end being fitted with a nozzle with tap for directing the jet of gas. It seemed to answer well in the only case I saw it used, but owing to the bottle being one of those where the gas comes off very irregularly, in sudden bursts, and there being no quieter attached, the operator was unable to keep the blast from going all over the mouth. It was also used for the painless extraction of a loose tooth; but here again the same unfavourable conditions, combined with the extreme looseness of the tooth, prevented a proper conclusion being formed. The principle of its operation was said to be "dehydration;" but how that can apply both to relief of sensitive dentine and the extraction of teeth, one cannot very well understand.

Dr Niles showed a little instrument, the idea of which was to apply the vapour of alcohol to the cavity, and which is the invention, I believe, of Mr Small of Boston. A small piece of metal tube is filled with cotton wool saturated with alcohol, and slipped into a somewhat larger tube with a closed end, and a rubber cork prevents the vapour escaping. Through the closed end passes a fine piece of metal pipe with a bulb on it, and which bulb is heated in the flame until the vapour passes off. The nozzle is then held for a few seconds in the cavity, and the excavation proceeded with. Having some sensitive parts at the neck of my canines, I acted as patient, and it certainly removed the feeling when scraped with an excavator, but I did not see it used in any good case of the kind. Since coming home I have tried it on a few occasions, but my faith in its efficacy is not very strong.

In the matter of fillings, there were demonstrations with the electric, Bonwill improved mechanical, and hand mallets. The tin and gold combination, which seems to have taken such a strong hold in Germany, I did not see used, except by a student, I think, who was filling an approximal in an incisor with it,—not certainly a very suitable place, but probably there was the question of cost. Mr

Brunton of Leeds, in a distal cavity of a canine, demonstrated the method of using amalgam at the cervical wall, and finishing with gold. Then there was the new method of glass filling, which Mr Biggs has demonstrated to-night.

In the way of crown work, there was a demonstration of putting on a Richmond crown, by Dr R. W. Starr of Philadelphia, who confines himself entirely to crown and bridge work, and whose name is well known on both sides of the Atlantic in that connection. As there were various points of interest in the methods employed, I hope you will pardon me for giving a somewhat minute detail of the operation. The tooth was a right-central incisor with a distal cavity, having an exposed pulp, and the distal corner broken off. The operator stated that he never used arsenic except in cases of back teeth, and also that teeth may be cut off with hardly any pain without its use. The tooth was nicked on both sides, labial and palatal, with thin discs, and cut off with an excising forceps in the usual way. Then taking a hickory peg, one end whittled down to somewhat less than the size of the pulp canal, the point was dipped in carbolic acid and driven home with a smart tap, producing evidently little pain, the projecting end being then twisted off. (Since coming home, I have tried this method once or twice, and the results incline me to believe that where in a single-rooted tooth you have free access and a pulp canal free from secondary deposit, especially at the entrance, this is a much better method, because less painful, than the ordinary one of removal by a nerve broach. Dr Harlan of Chicago, a short time ago, gave his experience of half-a-dozen cases where he tried it, with the result that the majority of the patients left him, and some threatened him with an action for damages. These, however, were probably cases for filling, and the conditions much less favourable than when the pulp and pulp cavity are completely exposed, as in excision of the crown.) The root was trimmed entirely with the corundrum discs, bevelling especially the palatal portion, which was not ground down to the gum level. The diameter of the root was then taken with wire in the usual way, but instead of cutting it at the lap, which is the direction in the books, it was cut opposite to it and the divided ends straightened out, the twisted portion thus forming a convenient handle. One of the ends of the wire being shortened by about one-sixteenth of an inch, a piece of coin gold, number 29 of the American guage, and about one-eighth inch wide, was cut off, the ends placed edge to edge, and soldered in the bunsen flame, forming the collar. This was then placed on the root, and, after a little adjustment, was forced up to fit tightly. It was then taken off, the gum edges bevelled, the sides being also filed concave, while the other edge was bent outwards slightly. Having been again placed in position, it was ground down to the level of the stump. A piece of plate of the same thickness as the collar was then placed on the top, held by a clamp and soldered. The superfluous plate having been trimmed off, the cap was finished and ready for adjustment. The root canal, with the remains of the wooden peg, was then drilled out deep enough for the pin, the end, however, of the peg being allowed to remain as a permanent apical plug, the operator stating that the pulp was literally displaced or knocked out by the peg,—quite a new light to me, who always thought that the invariable practice was to remove the whole of the peg along with the pulp, as soon as it had been driven up. The cap having been put on, a sharp point was forced through it, opposite the root canal. A piece of gold wire, in default of a platinum-iridium one, was then pressed through the hole in the cap, so that it was held tightly in place, and did not require the aid of wax to retain position. Taking the cap off, the pin was soldered, and the tooth was then fitted to the cap, the neck overlapping the gold in front, the whole of the adjustment being done in the mouth, so that there was no impression taken, from beginning to end. The tooth, cap, and pin were then put in a mixture of asbestos and plaster and soldered. To attach the crown, Dr Starr used Baldwin's oxyphosphate cement, which he stated did not pack in pressing up into position, the excess oozing out readily and not requiring a vent hole. As to time required for such an operation, he stated that a few minutes over an hour was sufficient for most ordinary cases.

Dr Melotte of Ithaca, another well-known authority, made a small bridge of one tooth, a lateral incisor, where the root had been extracted. As this demonstration was carried on simultaneously with the one just mentioned, I was not able to follow the detail so closely. A very nicely fitting gold band was made to fit the canine which was sound, about one-eighth of an inch being the width shown in front. To the side of this, the backed tooth was soldered with a small spur on the other side, resting against the back of the central, also a sound tooth. There was another demonstration of adjusting ready-made gold crowns, of which, however, I merely caught a glimpse.

The operation of implantation, as usual, attracted great attention, especially as its introducer, Dr Younger, was the operator. The operation has, unfortunately, a sort of sensational side to it, and there seems to be a tendency on the part of its exponents to pander to that. I do not suppose that it was Dr Younger's choice, but at any rate he was induced to use a bicuspid tooth of a mummy, the crown of which had crumbled off and was replaced by a crown of a natural tooth attached by cement. The root itself, I need scarcely say, was of that deep brown colour one finds in teeth whose age is measured by centuries. There was no possible reason for its use, except as I have just stated, and it seemed to be quite a degradation of an operation which is presumably a scientific one. In this case, no exception could be taken to the very neat manipulations of Dr Younger himself, and which might be regarded as the redeeming feature.

Of mechanical dentistry proper there was little to be seen, Dr Cunningham, of Cambridge, having it nearly all to himself, in his demonstration of a low heat porcelain gum, which has been since shown at Exeter. His knowledge of all the official languages enabled him to make the most of his auditors understand the process.

Though not a clinical demonstration, I may perhaps add, in closing, that the exhibition of micro-photographs by Mr Mummery seemed to be the most appreciated feature in the dental section.

Mr WILSON exhibited an upper molar, the pulp of which had become calcified after its exposure through fracture. Also the model of an under jaw, showing suppression of lateral incisors with a good history, as the patient and her parents had taken considerable interest in the teeth not coming as they ought.

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